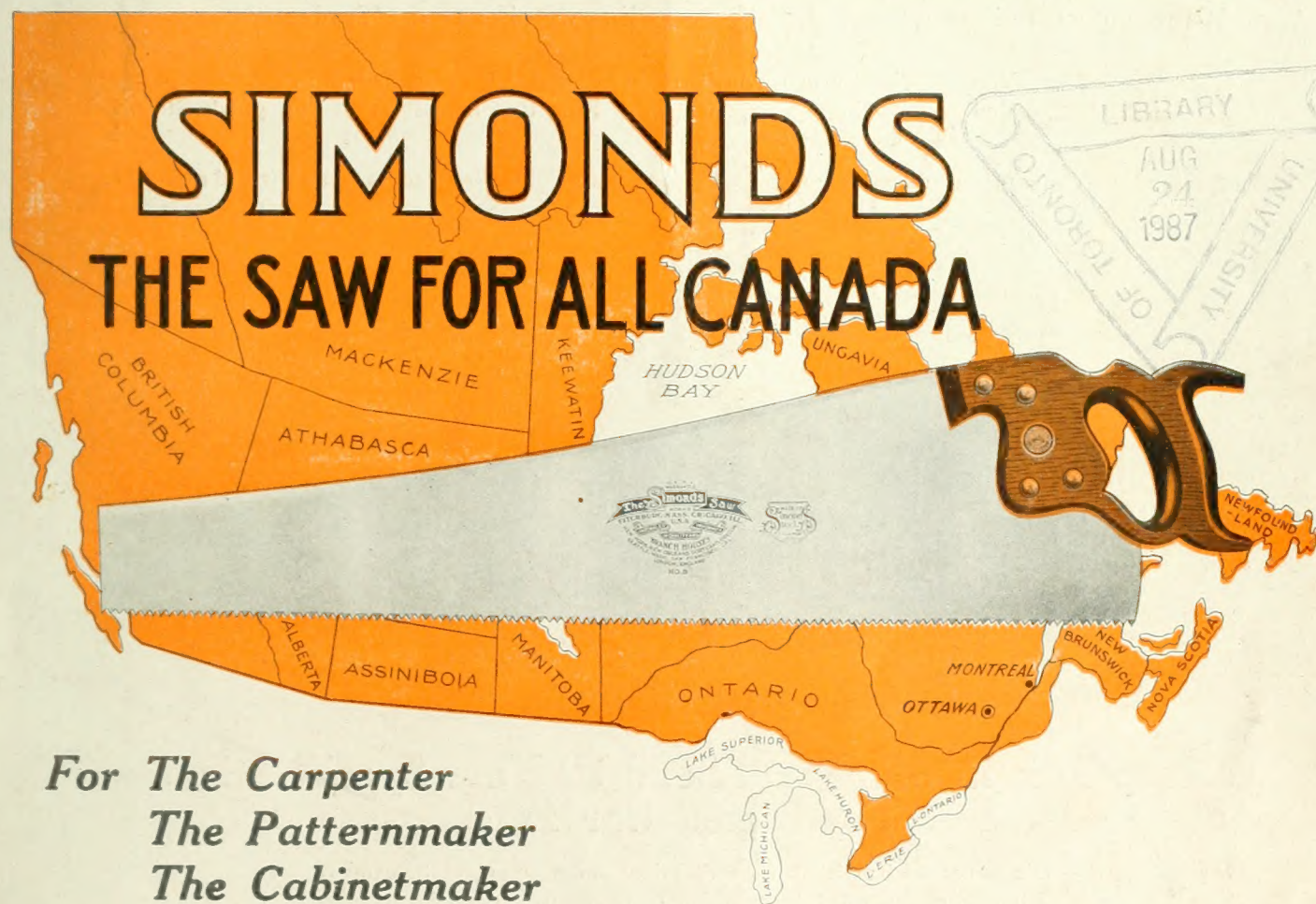


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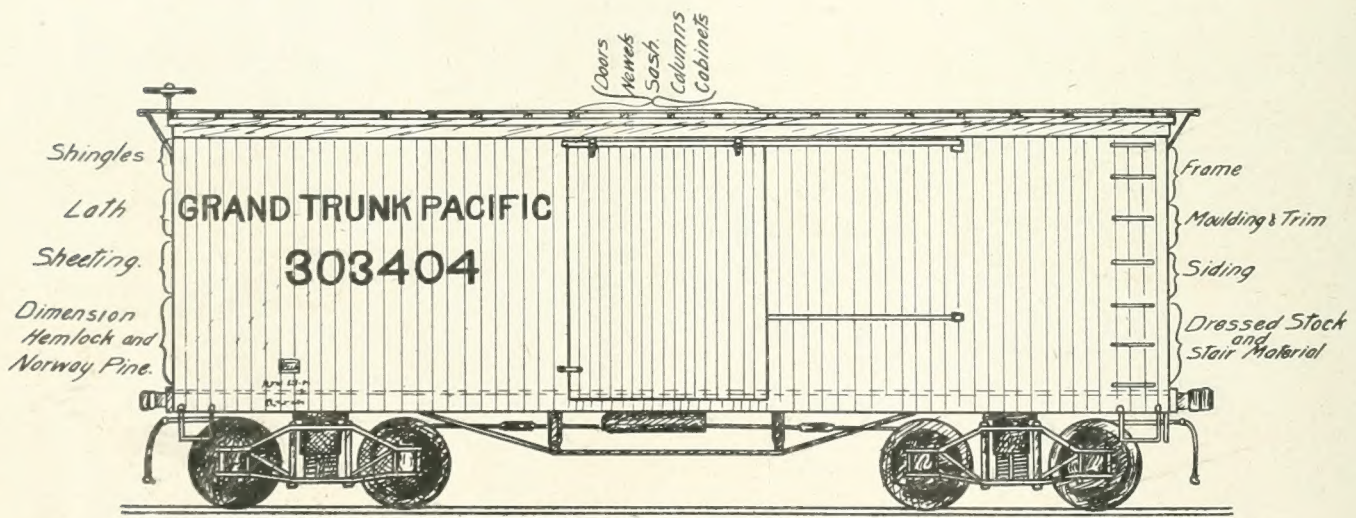
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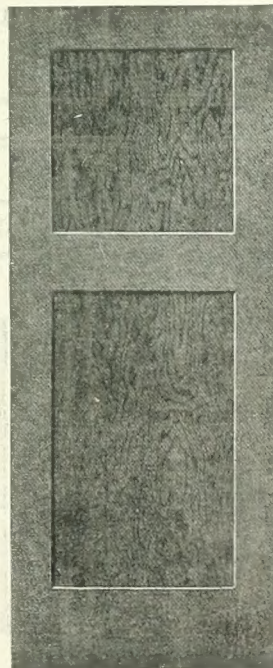


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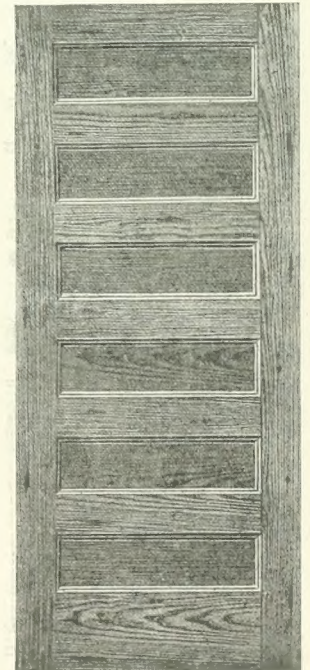


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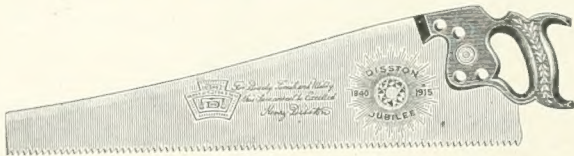
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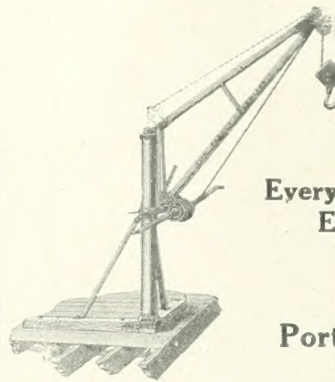
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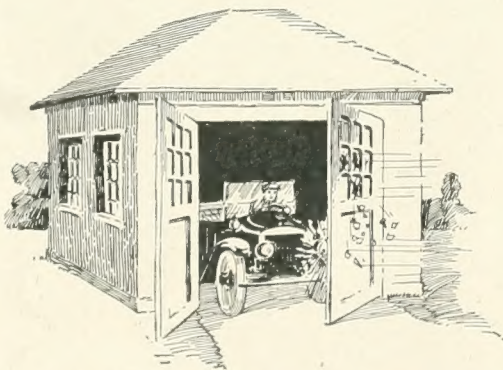
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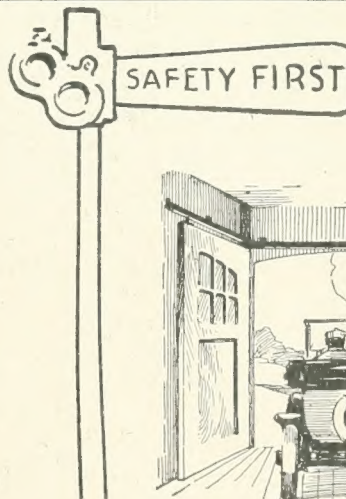
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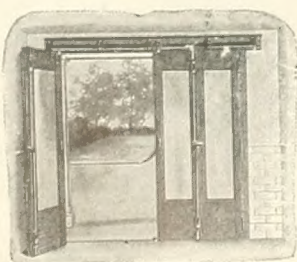
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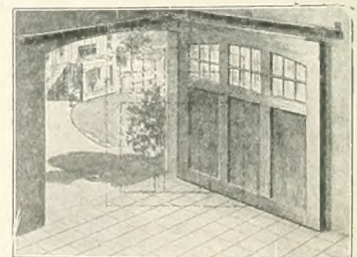
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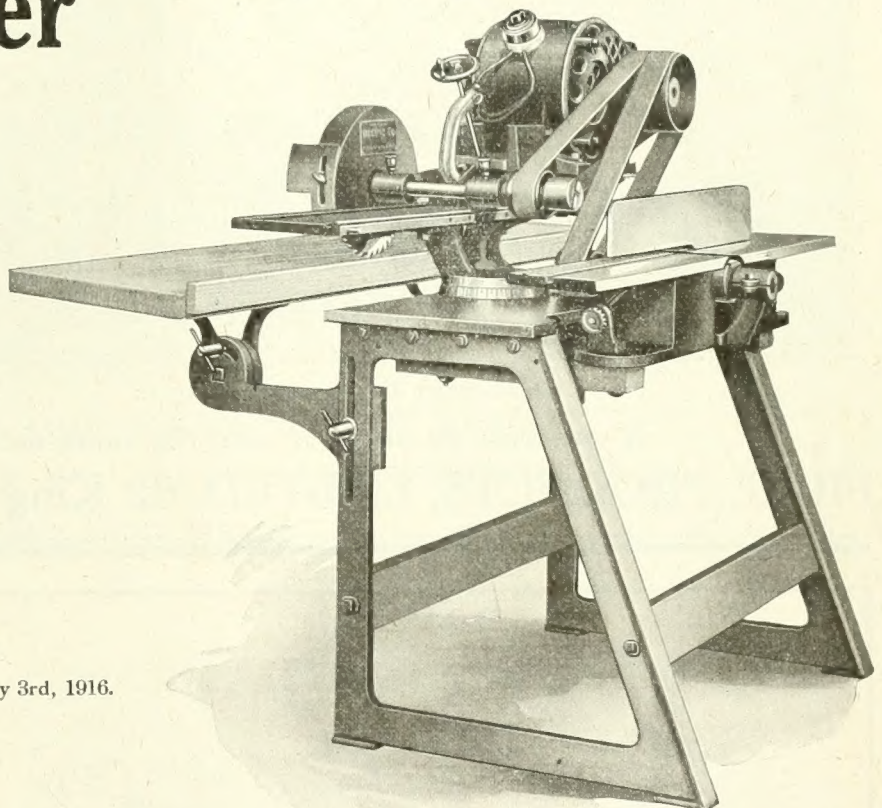
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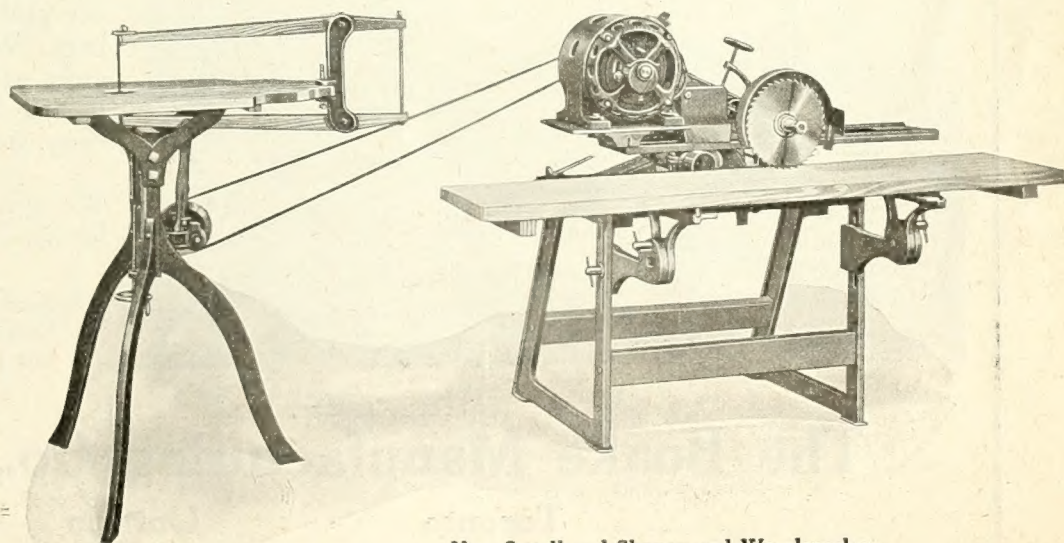
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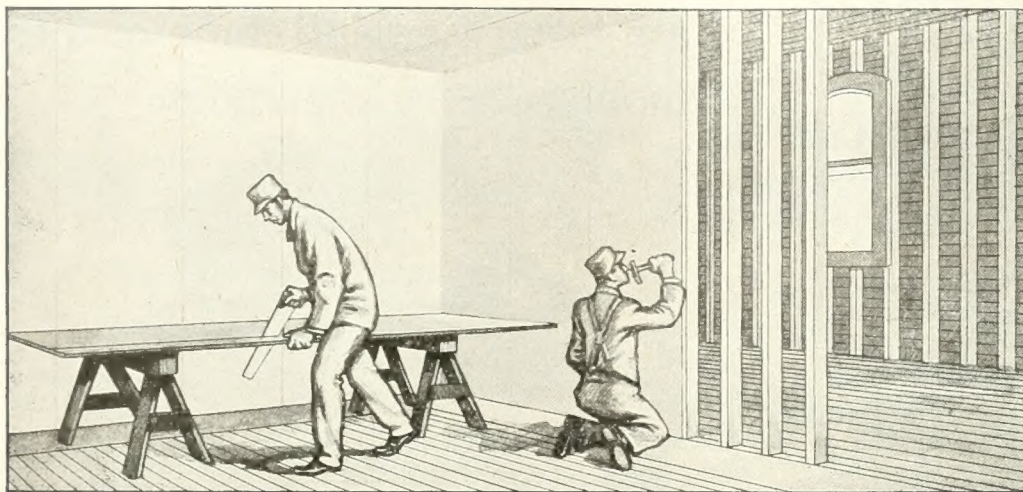
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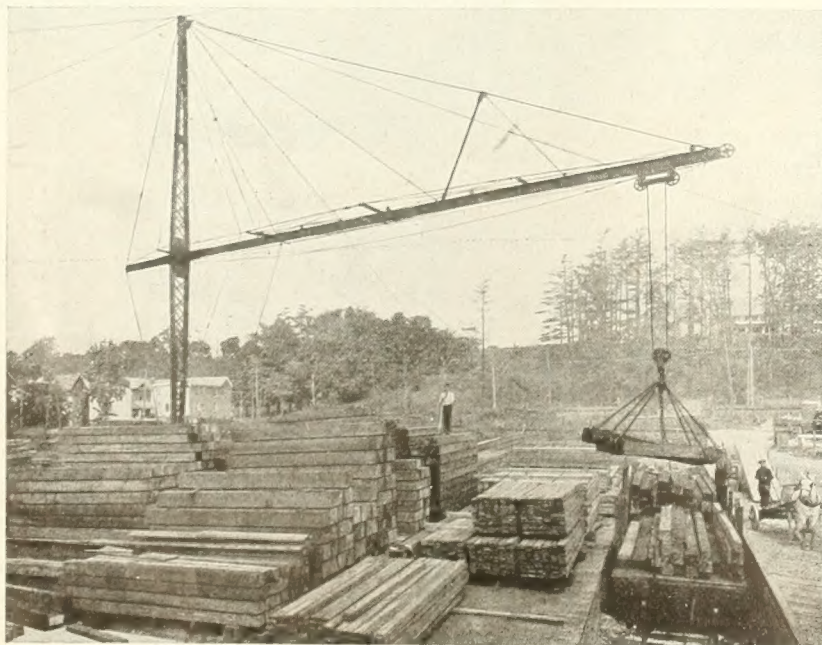
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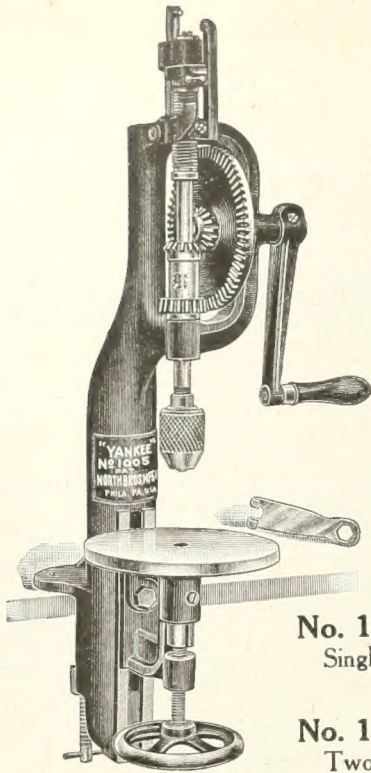
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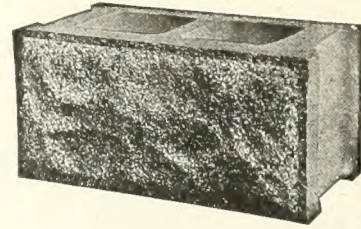
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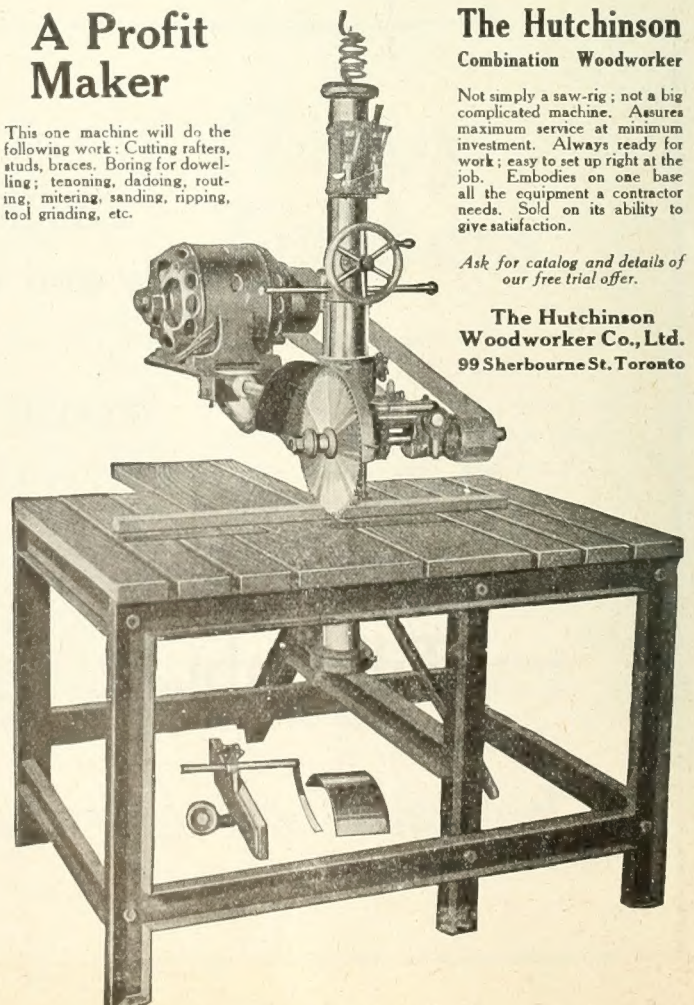
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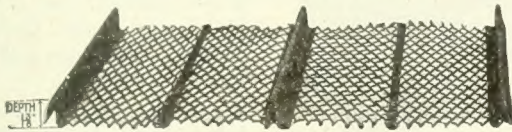
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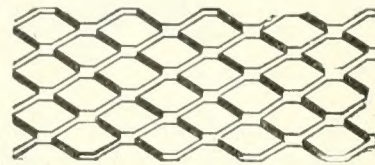
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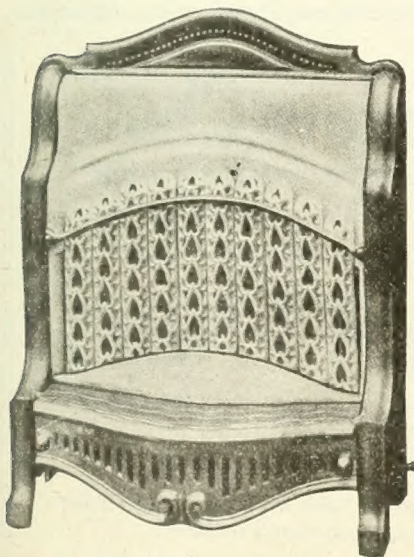
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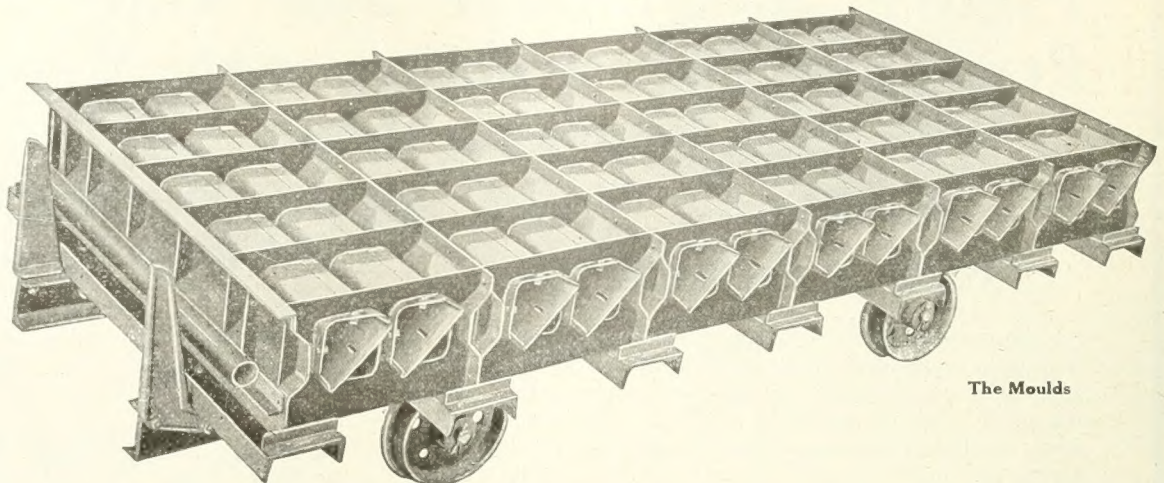
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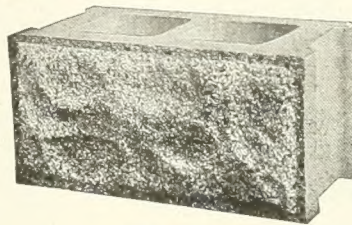


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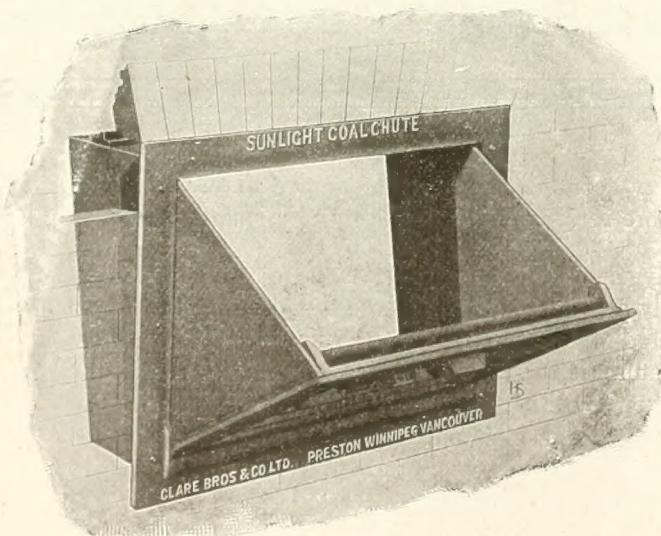
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TORONTO, APRIL, 1916

No. 4

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Success Came by Giving People Made-to-Order Homes

Mr. H. Addison Johnston started into the building business in April, 1915, and because he has built the houses people wanted in locations which suited them, he has kept busy ever since. The following article, with views of houses, is proof of that.

By GORDON C. KEITH

THAT there is considerable building business going on in various parts of the country is shown by the recent reports received at this office. These show that there are many opportunities open for business if advantage is taken of them. Proof of this has come to us in the interesting story of success in the building business of Mr. H. Addison Johnston, 63 Normandy Blvd., Toronto, who, grasping the opportunity to give people what they wanted in the design of a house, started into house building in April, 1915. Since then he has erected or has under construction eight houses, and he states that prospects for business during 1916 will eclipse that of 1915.

Secret of Mr. Johnston's Success

Mr. Johnston, previous to building houses, was in the real estate business, where he got the idea which brought him immediate success as a builder. The secret was this: Houses in a locality that appealed to them did not suit the people who wished to buy. Also, in a desirable locality there was no suitable house for sale.

What the Public Want in a Home

In dealing with the public Mr. Johnston imbibed many of their ideas, and this is how he tells the story of what people expect in a home:

"The home must be located on a good lot, not too shallow. It must be fairly level, not too high above the ground and certainly not below it. It must be reasonably close to transportation, on a good street, among other desirable houses.

"Individuality must be expressed in its design. The house must have a cozy appearance and an inviting, hospitable entrance and express something of the character of the people desiring the home.

"The interior must express individuality even more. The general requirements called for by the house-buying public are: Large, bright, airy living rooms with a real old-fashioned brick fireplace; dining rooms with built-in buffets; kitchens with all necessary cupboards, etc.; large airy bedrooms with commodious clothes closets, and a sleeping balcony. In the larger home a recreation room and billiard room are called for, but all must have that individuality which makes a real home."

"Made-to-Order" Houses Originated

Actuated by this knowledge, Mr. Johnston initiated the Johnston "Made-to-Order" house. "Made-to-Order" means built to the buyers' own order, containing all the ideas and conveniences which a buyer has cherished to be brought forth when a new house was to be purchased.

Before starting out with this idea he drew up plans and built a model of a proposed house. This model

was the means of selling the first house. All the details were arranged before the house was started and the ideas of the buyer were included in the design. The house, therefore, was built-to-order for the purchaser.

Mr. Johnston's plan to give the people what they want was a great success. He found he could suit people both as to locality and design. He gave them good value and found that satisfied customers brought him others. In this way the years 1915 and 1916 have proved busy ones for him in the building business.

The accompanying illustrations show the elevations and plans of three of Mr. Johnston's "Made-to-Order"

houses. These houses carry out the idea of giving people the class of house they want in the location preferred by them.

Fig. 1 shows a house on Normandy Blvd. It has an inviting, hospitable appearance, with stone fence, brick walk and brick verandah, and an inviting seat on the verandah. The front is unostentatious, and simplicity and comfort are the keynote of the building.

Comfortable Living Room

The interior layout is shown in Figs. 4 and 5. There is a real cozy, comfortable living room, bright and airy. It has a real, big, old-fashioned brick fireplace, with all the new-fashioned im-

provements—a gas attachment for lighting coal or wood fires without kindling, an ash dump to the cellar, a damper that operates from the front and involves no blackening of fingers in operating it, a raised hearth to act as a footstool when toasting our toes before the fire, and a dropped inside hearth so that the ashes cannot work out, to say nothing of the brick hobs to keep our old-fashioned kettle upon.

The features include a large square bay, with wide-sided casement windows of leaded glass, with a big, comfortable built-in window seat, with a long low radiator concealed behind it.

The ceiling is oak-beamed, with stucco-finished plaster in real old English style. Floors are quarter-cut oak.

Buffet Arrangement Between Dining Room and Kitchen

In the dining room is a big buffet built into the wall between the dining room and the kitchen. It has leaded chipped glass doors to the china cabinet above, drawers and cupboards below, and a sliding bevel plate mirror at the back about table high. The drainboard of the white enamel kitchen sink is so arranged that when the sliding mirror is pushed back the dishes from the dining room table are passed right through the opening on to the drainboard. Not until every dish has been cleared from the table is it necessary to make a trip to the kitchen. The dishes are washed at the sink, and without moving one step they are put away in the china cabinet of the buffet by means of separate doors



MR. H. ADDISON JOHNSTON

which open on the kitchen side. When the table is to be set the dishes are taken out on the dining room side.

Conveniences in Kitchen

The kitchen itself is a model of efficiency. It has a dust chute in the floor, so that all dust may be swept down instead of gathering it up in the dustpan. There is a socket for an electric iron, a broom cupboard to hang brooms and brushes in, a drip pipe for the refrig-

erator, and a little cupboard in which the milkman and baker may leave their supplies. There is also a cupboard built in the outer wall to keep things cool, shown at "A," Fig. 4. At "B" is a small built-in box at the floor for rubbers with coat hooks above.

At "D" is an arrangement of slides and stand, permitting the telephone to be used in three rooms, the den, kitchen and sunroom. At present the den is used for an office, and at "E," which is closed at



Fig. 1. Front elevation of house on Normandy Blvd.



Fig. 6. - Brick and stucco house, made to order.



Fig. 2.-Built-in seat in corner of living room of house shown in Fig. 1.



Fig. 3.-Fireplace in living room of house shown in Fig. 1.

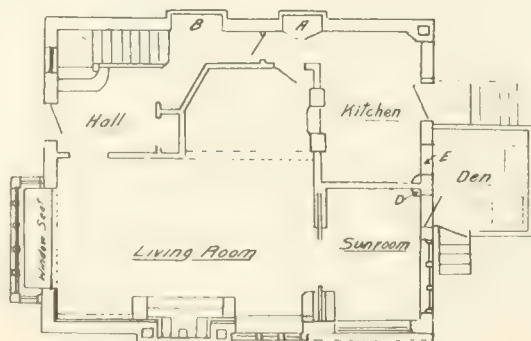


Fig. 4.-First floor plan of house shown in Fig. 1.

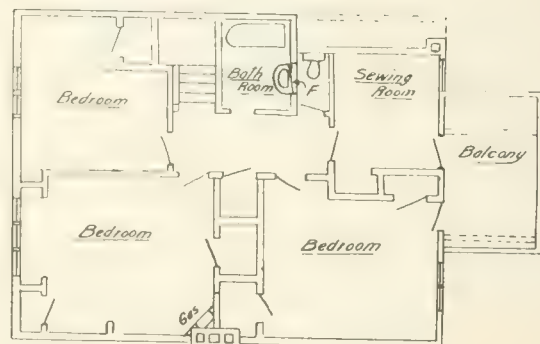


Fig. 5.-Bedroom floor plan of house shown in Fig. 1.

present, it is arranged so that a door may be cut through at any time without any difficulty.

Upstairs Layout

The layout upstairs includes, first, a large, bright, airy room, with two clothes cupboards, large cupboards with many hooks, brass rods for supporting clothes hangers, low boot shelves and high hat shelves. There is a gas fireplace for coziness. The room is finished in

white enameled woodwork with oak floors. There are also two other bedrooms and sewing room.

The bathroom is finished in white enamel, with sanitary enameled or tiled wainscoting. Over the basin is a large bevel plate mirror, and at the side an electric light conveniently arranged for our gentleman's shaving.

There is also a sunroom or sleeping balcony and an attic for storage only.

The cellar is large and is bright, with high ceiling. There is a separate laundry room, with laundry tubs,

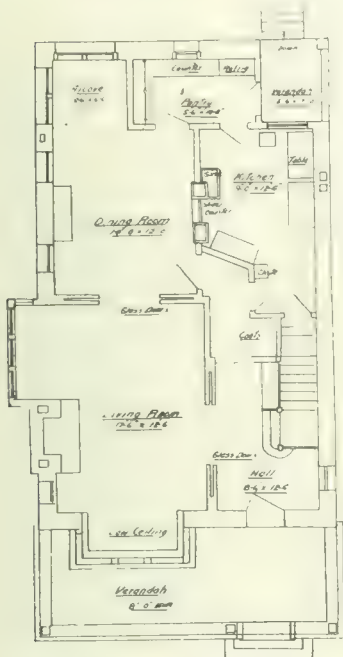


Fig. 7.—Floor plan of house shown in Fig. 6.

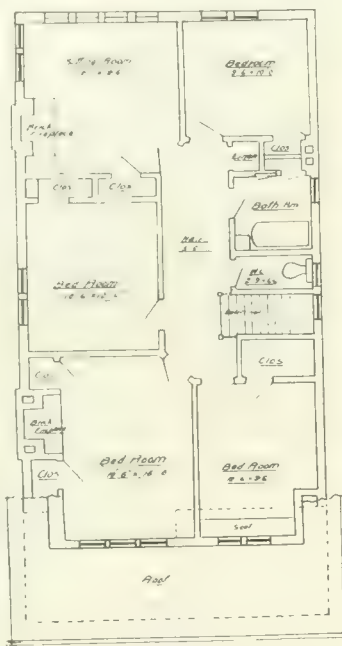


Fig. 8.—Bedroom floor of house shown in Fig. 6.



Fig. 9.—Buff brick and stucco house situated on corner lot.

gas stove, and lines for drying clothes in cold or stormy weather. There are inside and outside entrances. Fruit shelves and a vegetable room, which are essential, are also provided.

The other illustrations show two other houses built by Mr. Johnston. The photographs hardly do justice to the appearance of them. The writer had the pleasure of visiting them and found them to be well built, of excellent finish, and all those things which are so dear to a housewife's heart provided. These conveniences include cupboards of all kinds, clothes chutes, built-in seats, etc.

✱ ✱

To rip good, wide lumber up into stock for small mouldings is an unnecessary waste of both time and material. There is enough narrow stock and edgings going to waste to make all the small moulding needed in the country.

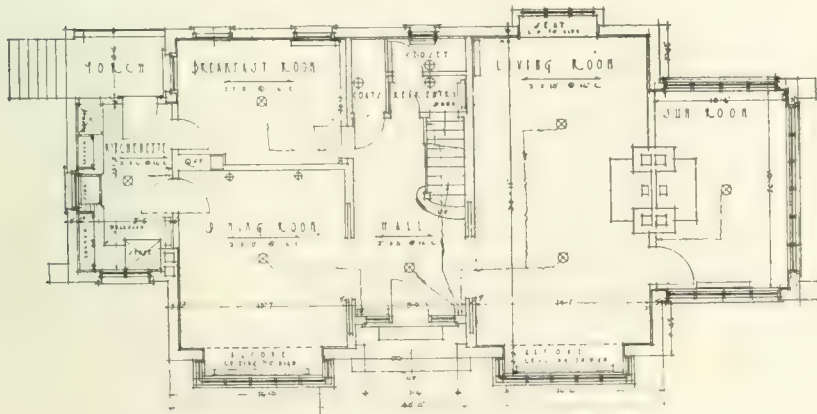


Fig. 10.—Ground floor plan of house shown in Fig. 9.

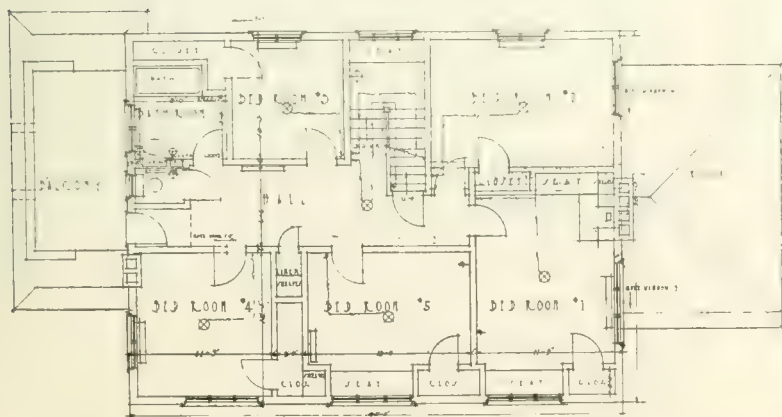


Fig. 11.—Bedroom floor of house shown in Fig. 9.

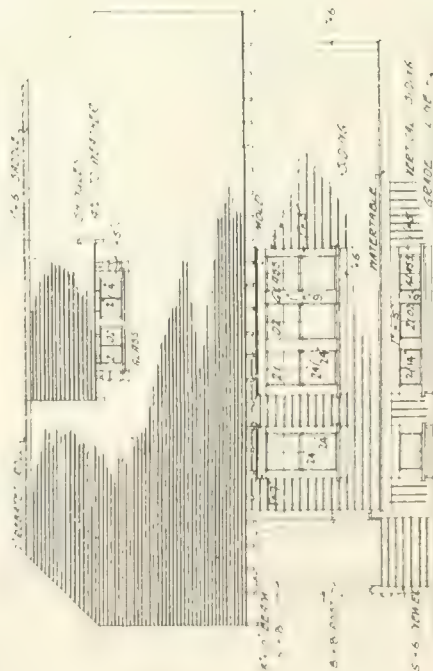


Brick garage. The American Clay Machinery Co., Bucyrus, Ohio, who supplied the illustration state that it is handsome, devoid of dampness, and not expensive to construct.

FARM HOUSE N°5

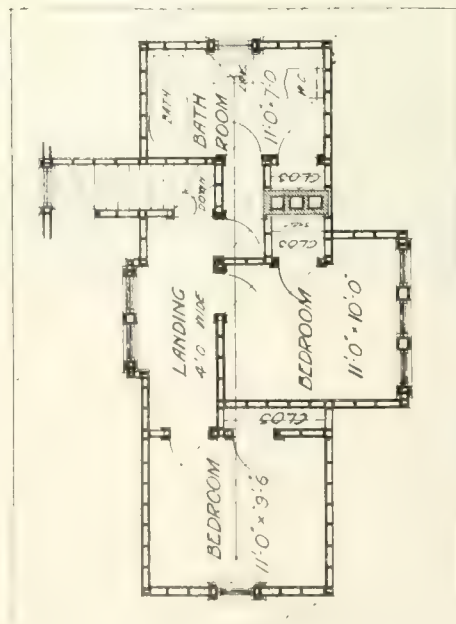
SCALE OF FEET 8'

2' 0" 4' 0" 6' 0" 8' 0" 10' 0" 12' 0"



REAR ELEVATION

4.1 2000 26'-0"



SECOND FLOOR PLAN

Fig. 4.—The bath room is placed immediately over the kitchen. This position will ensure a quick supply of hot water and will require a minimum length of water and waste pipe.

Detailed Drawings and Bills of Materials of a Frame Farm House

(By courtesy of the British Columbia Forest Service, Victoria, B.C.)

FARM HOUSE N°5

SKETCH

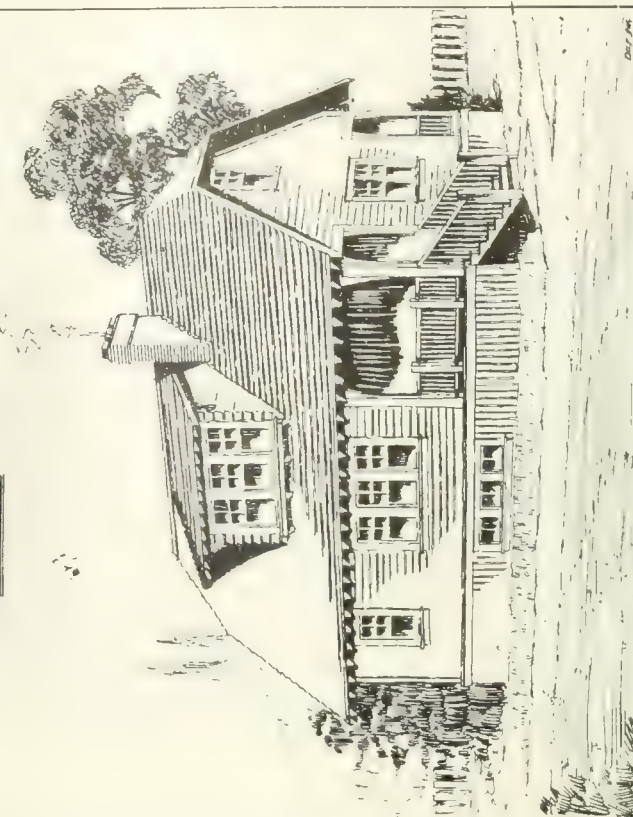


Fig. 1. A house that will appeal to the farmer who desires a residence of attractive appearance with plenty of room at a moderate cost. It has a basement, two stories and a loft, and will accommodate a family of eight or more.

Rural Frame House with Complete Bill of Materials

Full details are given in the plans and elevations. Bills of materials show all the necessary lumber, hardware, etc., required. The plans and bills of materials are reproduced by courtesy of the British Columbia Forest Service, Victoria, B.C.

THIS house will appeal to the farmer who desires a residence of attractive appearance, with plenty of room, at a moderate cost. It is 24 x 35 feet outside, has a basement, two storeys, and a loft, and will accommodate a family of eight or more persons.

The basement is the full size of the house and contains a heating chamber, a room for a rain-water tank, two fuel stores or bins, and one store room. The fuel stores are fitted with movable boards to give easy access to the coal. The stairway to the basement leads out of the kitchen.

On the ground floor there is a large living room, a kitchen, and two bedrooms, each with closets. The living room, which will serve also as the dining room, is the central feature of the house. It extends across the full width of the house and has large windows facing front and back; a fireplace, though not shown, can easily be put in. The kitchen, while not as large as in some of the other houses, is very compact and convenient to work in.

On the bedroom floor there are two bedrooms and a large bathroom, all provided with good closets. The bathroom is placed immediately over the kitchen; this position will ensure a quick supply of hot water and a minimum length of water and waste pipe.

BILL OF MATERIAL, FARM HOUSE

Framing Lumber

No. of Pieces	Inches Thick	Inches Wide	Feet Long.	Feet Board Measure	Used for
1	6	6	16	64	Beams in basement under ground floor joists.
2	6	6	14	112	
2	6	6	12	96	
1	6	6	8	32	Posts under beams in basement.
6	6	6	8	144	
2	6	10	14	47	
6	6	10	14	140	Stringers for stairs to bedrooms.
2	6	10	12	40	To cut loose boards to fuel bins.
7	6	10	6	70	Strings to basement stairs.
14	6	8	16	299	Treads to basement stairs.
10	6	8	16	213	Joists under kitchen and verandah.
19	6	8	14	355	Joists under living room.
9	6	8	14	168	Joists over living room.
9	6	8	14	168	Joists over kitchen.
9	6	8	12	144	Joists over ground floor bedrooms.
17	6	8	12	272	Joists over ground floor bedrooms.
9	6	8	12	144	Joists over verandah and back porch.
10	6	8	8	107	Joists under living room.
2	6	6	16	32	Ridge.
10	6	6	16	160	Ceiling joists in dormer.
20	6	6	8	160	Collar ties as ceiling joists.
36	4	20	480		Rafters, main roof.
*30	4	16	320		Plates and sills.
12	4	16	128		Rafters to roof ends.
8	4	16	85		Studs, side walls and gables.
8	4	14	75		Studs, side walls and gables.
25	4	14	233		Studs to basement partitions.
12	4	14	112		Rafters, front dormer.
17	4	14	159		Extra studs for door openings.
*30	4	14	280		Plates and sills.
*20	4	12	160		Plates and sills.
10	4	12	80		Rafters below back dormer.
10	4	12	80		Studs, side walls and gables.
18	4	10	120		Studs, side walls and gables.
6	4	12	48		Bearers under stairs.
*30	4	10	200		Plates and sills.
130	4	10	867		Studs, ground floor wall and parti- tions.
9	4	10	60		Rafters, back dormer.
18	4	10	120		Extra studs to window openings.
65	4	8	347		Studs, second floor.
4	4	8	21		Studs, side walls and gables.
8	4	8	43		Rafters to hip-roof.
47	4	6	188		Partition studs, second floor.
10	4	6	40		Rafters below front dormer.
8	4	6	32		Extra studs for door openings.
5	4	6	20		Upright ties for ceiling joists to dormer rafters.
24	4	4	64		Upright ties, ceiling joists to ridge.
*15	2	16	80		Bridging to joists.
14	2	10	47		Furring around chimney brickwork.
14	2	8	37		Furring around chimney brickwork.

Total framing lumber... 7,493

Finish Lumber

No. of Pieces	Inches Thick	Inches Wide	Feet Long.	Feet Board Measure	Used for
1	2	12	80	Beams, front and back porches.	
1	2	10	67	Beams, front and back porches.	
1	2	10	40	Beams, front and back porches.	
6	2	8	236	Beams, front and back porches.	
1	6	8	160	Brackets on front porch, to cut 8 pieces.	
6	2	4	72	Newels to porch steps and verandah.	
4	2	6	48	Strings, front and back porch steps.	
3	2	10	50	Steps, back porch, to cut 6 pieces.	
2	2	10	50	Framing to kitchen cupboard and draining board.	
2	2	8	50	Verandah balusters.	
6	2	12	96	Cupboard shelving.	
10	2	16	133	Belt course and casings to mullions of windows.	
4	1	10	52	Frieze on walls.	
4	1	8	13	Fascia to gables.	
1	1	8	19	Fascia to dormers.	
1	1	8	16	Fascia to gables.	
2	1	8	13	Fascia to dormers.	
4	1	6	32	Ridge cover boards.	
4	1	6	32	Frieze to gables.	
2	1	6	12	Frieze to gables.	
14	1	6	70	Corner boards and casings.	
16	1	6	64	Door casings, heads.	
32	1	14	187	Door casings, uprights.	
4	1	10	13	Hat and coat rails.	
14	1	10	47	Inside casings for windows.	
8	1	8	21	Inside casings for windows.	
3	1	10	8	Kitchen cupboards.	

Total finish lumber.... 1,729

*Random lengths to make up the same total number of lineal feet will answer for these items, and are cheaper than special lengths.

Short lengths (i.e., under 10 feet) cost less than long, and where they will answer the purpose it pays to specify them. For example, it is cheaper to buy 6- and 8-foot lengths than to cut them out of 12- and 16-foot lengths.

1,000 feet, board measure, 1-in. shiplap on ground floor joists.
700 feet, board measure, 1-in. shiplap on bedroom floor joists.
2,300 feet, board measure, 1-in. shiplap on all outside walls.
1,600 feet, board measure, 1-in. shiplap lining on inside of wall studs.
600 feet, board measure, 1-in. shiplap on partition studs in basement.
1,800 feet, board measure, 1-in. roof boarding, laid close; if open boarding is desired, 1,200 feet will suffice.
750 feet, board measure, 1-in. V-joint for overhang of eaves and gables, porch ceilings, kitchen cupboards, and basement door.
2,300 feet, board measure, siding.
1,700 feet, board measure, 1-in. T. and G. flooring.
17,000 British Columbia red cedar edge-grain shingles (68 bundles). (If V-joint dado 3 feet high in all rooms is desired, 1,700 feet, board measure, V-joint and 420 lineal feet cap-mould for it will be required.)

32 lineal feet ridge roll.
36 lineal feet 1½-in. x 12-in. treads for front porch steps, in 16-ft. lengths.
40 lineal feet 3-in. x 4-in. handrail to steps and verandah.
120 lineal feet 2-in. x 4-in. water table.
110 lineal feet 4-in. x 4-in. eave gutter.
70 lineal feet window stool.
220 lineal feet cap-mould on door and window casings.
260 lineal feet picture mould.
450 lineal feet 1-in. x 8-in. baseboard.
450 lineal feet 1-in. quadrant mould.
40 lineal feet angle bead to plaster.
14 lineal feet wall handrail for stairs to bedroom floor.
16 windows, 2 lights, check rail; outside measurement 2 ft. 4 in. x 4 ft. 6 in.; top sashes in 4 lights; and 16 frames complete with sills and outside casings for 8-in. wall.
13 sashes, 2 lights, 12 in. x 14 in.; outside measurement 2 ft. 4½ in. x 1 ft. 7 in.; and 12 frames complete with sills and outside casings for basement (this includes 1 frame for fuel chute door); and 2 frames for landing to bedroom floor complete with sills and casings for 8-in. wall.
13 doors, 2 ft. 6 in. x 6 ft. 6 in., for inside; and 13 frames for 5½-in. wall.
1 door, 2 ft. 6 in. x 6 ft. 6 in., and 1 frame for 5½-in. wall.
1 front door, 3 ft. x 6 ft. 6 in.; and 1 frame and sill for 8-in. wall.
1 back door, 2 ft. 6 in. x 6 ft. 6 in.; and 1 frame and sill for 8-in. wall.
100 bundles of lath.
16 bundles tar or building paper.

Hardware

150 lbs. 4-in. common nails.
180 lbs. 2½-in. common nails.
50 lbs. 2-in. flooring nails for siding.
40 lbs. 2½-in. flooring nails.
40 lbs. 2-in. finish nails.
30 lbs. 2½-in. finish nails.
85 lbs. 1½-in. shingle nails, best quality galvanized, zinc clad, or cut iron.
100 lbs. lath nails.
2 metal doors and frames for ashes clean-out in cellar.
3 thimbles for chimney.

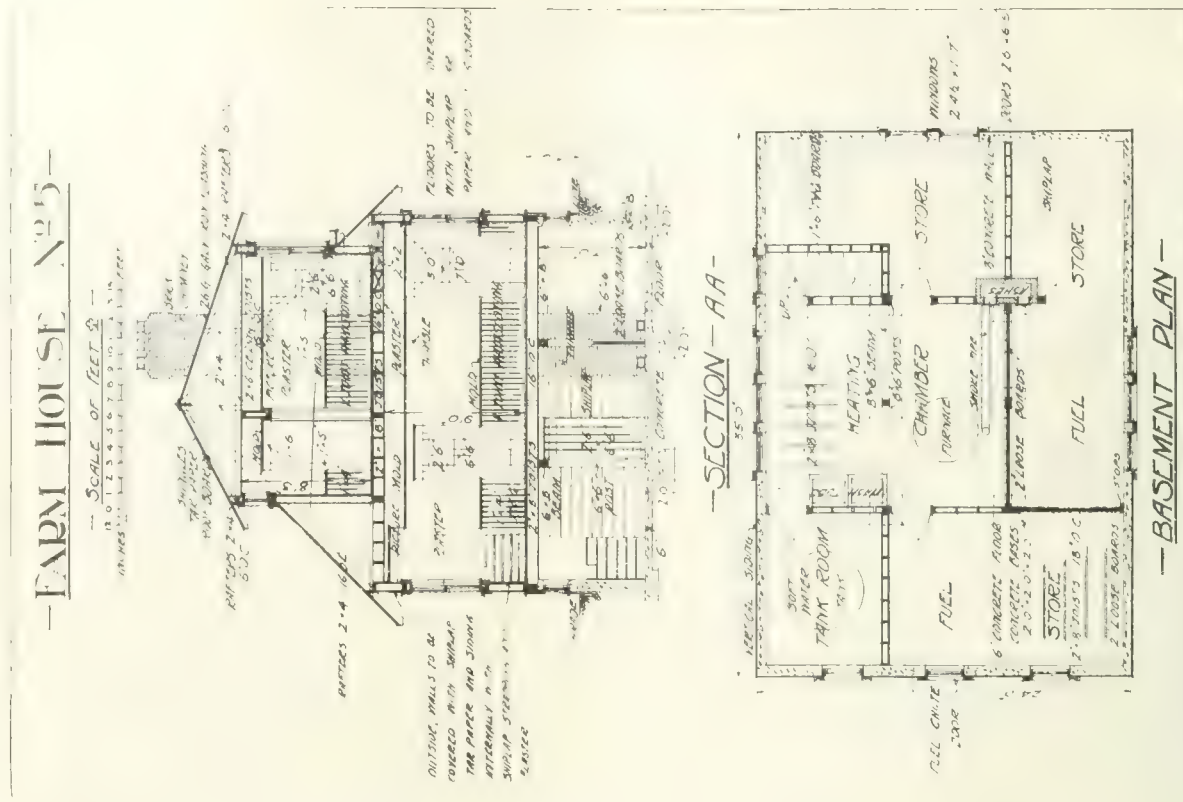


Fig. 2.—The basement is the full size of the house and contains a heating chamber, a room for a rain water tank, two fuel store rooms or bins, and one general store room.

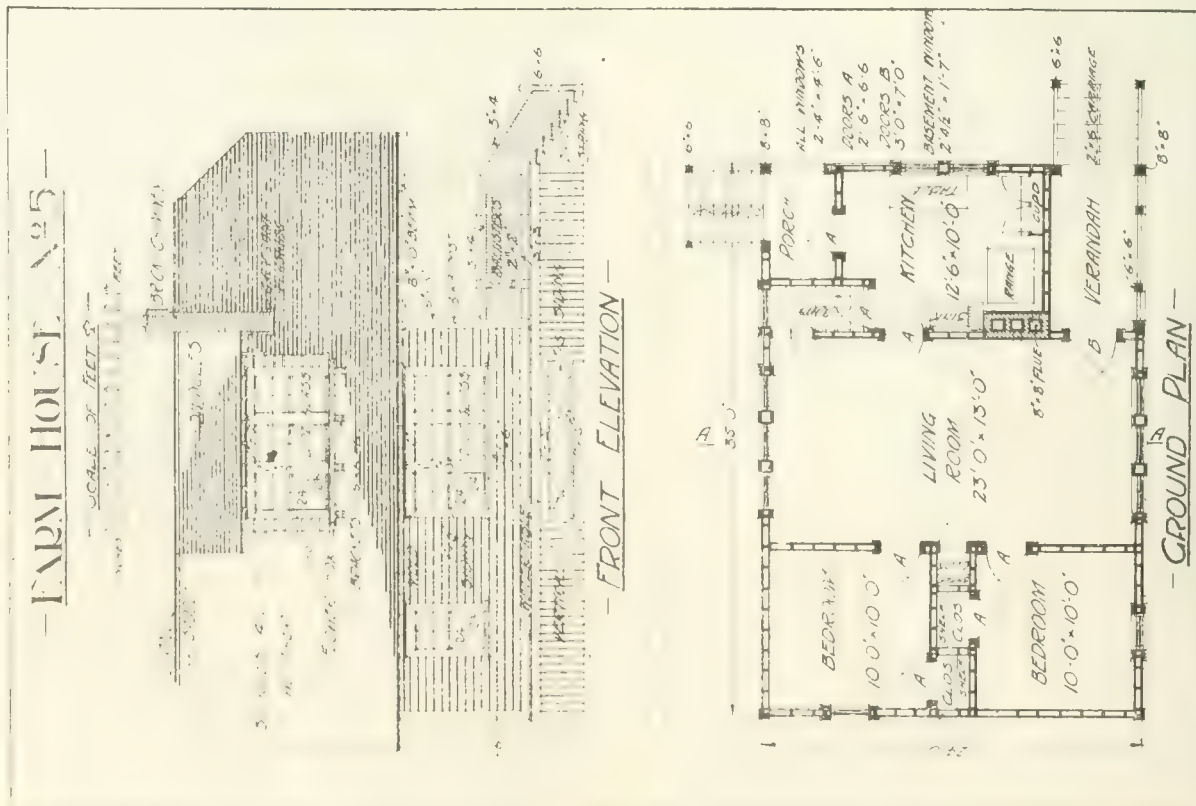


Fig. 3.—The living room, which will also serve as the dining room, is the central feature of the house. It extends across the whole width and has large windows facing front and back.

- NOTE: The following are not included in this bill of material: Furnace and heating installation, soft-water tank, drainage, waste and ventilating pipes.

Payment for Materials and Work. ARTICLE 8:—The Owner shall pay to the Contractor for materials furnished and the work performed by the Contractor under this Agreement, the sum of subject, however, to the additions and deductions (if any) proper to be made pursuant to this Agreement, and payment shall be made (but only upon Certificates signed by the Architect) in the manner following. Each during the progress of the work, eighty per cent. of the value, calculated in proportion to the total contract price, of all work, service and materials actually done, placed or furnished by the Contractor (whether actually worked into the building or not), including extras, shall be paid to the Contractor; provided, however, that where the contract price exceeds Fifteen Thousand Dollars (\$15,000.00), eighty-five per cent. of such value,

cal that the total contract price, shall be paid, in full, or fifteen per cent., as the case may be, within thirty-five days after the completion of the work included in this contract. Payment of the balance or payment shall be made at the place where the work is situated or ready at any place, other than the site of the work, to be done under this contract, unless some special arrangement to the contrary is made. Provided also that if and when any progress certificate remains unpaid by the Owner for the period of five clear days or more after presentation thereof by, or on behalf of, the Contractor for payment, the Contractor may stop his work until the same shall have been paid. Provided further that no trade is to be considered complete until the other contracts are completed, subject to the following provision, namely, that the Architect, in respect of any completed trade, upon proof to his satisfaction that it is complete to a substantial and proper completion of such other contracts, or of some of them, by the payment of fifty per cent. on account of the twenty per cent. or fifteen per cent. drawback, if such drawback amounts to Two Hundred Dollars (\$200.00) or more.

No certificate issued by the Architect shall in any way lessen the total and final responsibility of the Contractor, neither shall it exempt the Contractor from liability to replace work if it be afterwards discovered to have been done badly or not done according to the drawings and specifications either in execution or as to materials.

Workmen's Compensation Act.

ARTICLE 9:—Before the Contractor may call for payment to him of any amount under this Agreement he must satisfy the Architect that he has paid any and all sums which he is liable to contribute to the Accident Fund under the Workmen's Compensation Act.

Mechanics' Liens, etc.

ARTICLE 10:—If requested by the Architect, a certificate shall be obtained by the Contractor from the Registrar of the County, where Mechanics' Liens may be recorded and signed by the said Registrar, that he has examined the records and finds no Mechanics' Liens or claims recorded against the land of the owner on account of the Contractor.

If at any time there shall be evidence of any lien or claim for which, if established, the Owner of the said premises might become liable, and which is chargeable to the Contractor, whether under or by virtue of the Mechanics' and Wage Earner's Lien Act, or whether under or by virtue of the Workmen's Compensation Act, or otherwise howsoever, the Owner shall have the right to retain out of any payment then due, or thereafter to become due, an amount sufficient to completely indemnify him against such lien or claim. Should there prove to be any such claim after all payments are made, the Contractor shall refund to the Owner all moneys that the latter may be compelled to pay in discharging any lien on said premises made obligatory in consequence of the Contractor's default.

Inspection, Condemnation, etc., of Work.

ARTICLE 11:—The Contractor shall provide sufficient, safe and proper facilities at all times for the inspection of the work by the Architect or his authorized representatives. And within twenty-four hours after receiving written notice from the Architect to that effect, the Contractor shall proceed to remove from the grounds or buildings, all materials condemned by him, whether worked or unworked, and to take down all portions of the work which the Architect shall by like written notice condemn as unsound or improper, or as in any way failing to conform to the drawings and specifications, and shall make good all work damaged or destroyed thereby. Provided always that the Architect, if and when he considers it right or expedient to do so, may accept or leave in place work condemned by him, and deduct from the amount otherwise payable to the Contractor, an amount equal to the cost of taking down and rebuilding such condemned work, or equal to what he considers the difference in value between the work as specified and the work as actually executed.

Right to Dismiss.

ARTICLE 12:—Should the Contractor at any time refuse or neglect to supply a sufficiency of properly skilled workmen, or of materials of the proper quality, or fail in any respect to prosecute the work with promptness and diligence, or fail in the performance of any of the Agreements herein contained, such refusal, neglect or failure being certified by the Architect, the Owner shall be at liberty, after three days' written notice to the Contractor, to provide any such labor or materials, and to deduct the cost thereof from any money then due or thereafter to become due to the Contractor

under his contract, and if the Architect shall certify that such refusal, neglect or failure is sufficient ground for such action, the Owner shall be at liberty to terminate the employment of the Contractor for the said work and to enter upon the premises and take possession, for the purpose of completing the work included under this contract, of all materials, tools, appliances, and equipment thereon, and to employ any other person or persons to finish the work, and to provide the materials therefor, and in case of such discontinuance of the employment of the Contractor he shall not be entitled to receive any further payment, under this contract, until the said work shall be wholly finished, at which time, if the unpaid balance of the amount to be paid under this contract shall exceed the expense incurred by the Owner in finishing the work, such excess shall be paid by the Owner to the Contractor; but if such expense shall exceed such unpaid balance, the Contractor shall pay the difference to the Owner. The expense incurred by the Owner as herein provided, either for furnishing materials or for finishing the work, and any damage incurred through such default, shall be audited and certified by the Architect, whose certificate thereof shall be conclusive upon the parties.

Co-operation of Specifications and Drawings.

ARTICLE 13:—The specifications and drawings are intended to co-operate, so that any work shown in the drawings and not mentioned in the specifications, or vice versa, are to be executed the same as if mentioned in the specifications and set forth in the drawings to the true intent and meaning of the said drawings and specifications. All figured or written dimensions on drawings or specifications shall supersede the measurements by scale.

Responsibility for Injury or Damage.

ARTICLE 14:—The Owner shall not be responsible or accountable in any manner for injury to any person or persons, either workmen or the public, or for damage to adjoining property from any cause which might have been prevented by the Contractor or workmen or anyone employed by him, against all which injuries and damages to persons or property, the Contractor, having control over such work, must properly guard and make good all damage, from whatever cause, being strictly responsible for the same.

Material on Premises.

ARTICLE 15:—All work and material as delivered on the premises to form a part of the works, are to be considered the property of the Owner, and are not to be removed without the Owner's consent; but the Contractor shall have the right to remove all superfluous materials after he has completed the work herein contracted for.

Damages for Non-Completion of Contract.

ARTICLE 16:—Should the Contractor fail to finish the work herein contracted to be executed at or before the time herein agreed upon, he shall pay to, or allow the Owner, as and for liquidated damages, the sum of Dollars per week for each and every week thereafter that the said work shall remain incomplete, subject to any extension of time allowed by the Architect under Article 7 of this Agreement.

Insurance on Building, Etc.

ARTICLE 17:—The Owner, during the progress of the work, shall maintain full insurance on the same against loss or damage by fire the Policies to cover all work incorporated in the building and all materials for the same in or about the premises and to be made payable to the parties hereto, as their interests may appear. The Owner, on the request of the Contractor, shall give him full information regarding the said insurance.

Liability in Case of Disputes and Cost of Arbitration.

ARTICLE 18:—In case any dispute or difference shall arise during the progress of the work or after completion, between the Contractor and the Owner as to any matter arising out of or under the contract, and whether the contract has been abandoned, rescinded or determined by forfeiture, or otherwise, and whether the claims arise under the contract or from the breach, rescission or abandonment thereof, it shall be referred to arbitration as provided in Article 19 hereof. Provided always that during the progress of the work the Contractor shall not be entitled to refer any matter to arbitration if such reference involves the stopping of the work. Provided further that if either the Owner or the Contractor shall apply for an arbitration the application shall not be entertained unless and until security to the satisfaction of the Architect to the amount of Two Hundred Dollars (\$200.00) has

been deposited by the applicant with some person or authority approved by the Architect to cover the costs of the arbitration.

Provided further that nothing in this Agreement contained, shall authorize any reference to arbitration as to any matter or question which under this Agreement is expressly or by implication required or permitted to be decided by the Architect or as to the grounds upon which, or mode in which, any opinion may have been formed or discretion exercised by the Architect.

Provided also that the Owner shall not be liable to any claim in respect of any such dispute until the liability and the amount of the liability of the Owner, in respect of the claim shall, if not admitted, have been referred to and determined by arbitration, the award under which shall be a condition precedent to liability of the Owner or to any right of action against the Owner in respect of the claim.

Procedure for Arbitration.

ARTICLE 19:—Any arbitration herein provided for shall be as follows: The Contractor and Owner shall each appoint one arbitrator, and such arbitrators shall appoint a third. The decision of any two of the three arbitrators shall be final and binding. Each of the parties hereto shall pay one-half of the expenses of such reference. A party who has not appointed an arbitrator after the other party has appointed one shall do so within two days after being notified in writing by such other party to do so. If the arbitrator of either party shall fail to proceed with the consideration of the matters within three days after being requested in writing by the other party's arbitrator to do so, such other party's arbitrator shall, if a third has not been appointed, be at liberty to act as a sole arbitrator, and his

decision shall be final and binding, or the other two arbitrators, if a third has been appointed, may forthwith appoint an arbitrator in lieu of the one who has failed to proceed as aforesaid, and the decision of two of such three arbitrators shall be final and binding. If either party has done all in his power to comply with the provisions herein contained as to securing an arbitration, but by reason of default of the other party, or of the Architect, or of the arbitrator appointed by such other party or by reason of the arbitrators being unable to agree, or for any other reason beyond his control, no award is made within a reasonable time, such party may take such action as would be permissible in the courts if no reference of the matter in question, either to the Architect or to arbitration, had been herein provided for, and the other party shall not be at liberty to object that the remedy is only by arbitration or that the arbitration is prerequisite to such action being taken or that the appeal to arbitration, having proved abortive, the decision of the Architect is final and binding. An award under the provisions of this Article may be made a rule or judgment of the High Court Division of the Supreme Court of Ontario.

ARTICLE 20:—The covenants herein contained shall apply to and be binding upon the parties hereto and their respective heirs, executors, administrators, successors and assigns.

IN WITNESS WHEREOF the said parties hereto have hereunto set their hands and seals, or (in case of a Corporation or Corporations) have hereunto caused their Corporate Seals to be hereto affixed by the hands of their proper Officer or Officers in that behalf.

SIGNED, SEALED AND DELIVERED
In the presence of

The Correct Hardware to Use in Each Room in the House

The object of this article is to draw the builder's attention to the possibilities of hardware as a decoration and the importance of careful selection for the different rooms.

By FRANK M. JEFFREY

Builders' Hardware Department, Aikenhead Hardware, Limited, Toronto.

IT is unfortunate that this country has adopted the unsatisfactory term "hardware" to designate the finer as well as the rougher interior metal work, both of utility and of decoration, used in buildings, although some consolation may be derived from the fact that the word is less inappropriate than the still more objectionable English term "Ironmongery." But it is too firmly established to be challenged and therefore must be allowed to pass.

It is well to remember, however, that in its broad sense it covers equally the metal work of construction, such as nails, screws, and other permanent fastenings; the metal work of convenience, such as locks, hinges, bolts, etc.; and the metal work of ornament, such as escutcheon plates, knobs, hinge-straps, etc.

The necessity for expressing this differentiation by works has led recently to the practice, which it is to be hoped may be generally adopted, of using the terms "rough hardware" and "finishing hardware," the former to designate constructive and rough material, such as sash weights and pulleys, sliding door hangers, etc., and the latter to designate all material intended for protection, convenience and ornament, especially that which is visible when in place.

Although the expenditure on finishing hardware averages only about 2 per cent. of the total expenditure on a residence, its selection is one of the most important. A door or window cannot be opened or closed without the handling of the hardware, therefore, strength of construction and utility should first be considered.

The history of the art of the locksmith is probably as old as the history of civilization, and references to it are found in the early literature of almost every nation. Wherever and whenever property became indi-

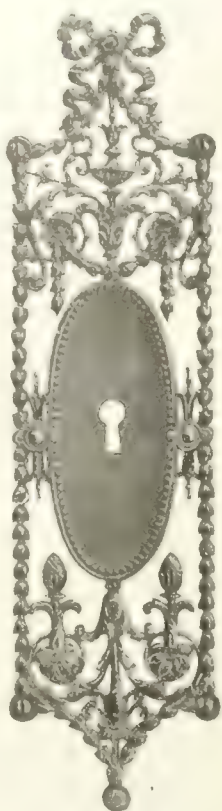
vidualized it is reasonable to suppose that means were desired and were devised for insuring its protection and privacy, and that thereupon locks in some form, however crude, came into existence. To summarize even briefly the many records of the early phases of the art which are available would carry us far afield and entirely outside the purpose of this article. However, it is sufficient to state that during the last few decades the artisan has perfected his work, and locks may now be had to suit every purpose.

Hardware Should Harmonize With Surroundings

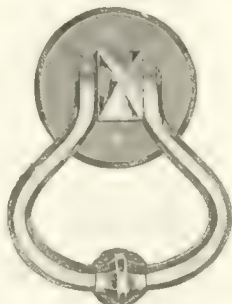
The second point to be considered is the appearance of the hardware. It should harmonize with the surroundings, both as to finish and decorative design. Of all of the subordinate elements of interior decoration there is none which offers a larger opportunity for effective results, and for the exercise of personal taste, than the metal work for doors and windows, and this is now available to the architect and his client in such variety of character, grades, and prices as to satisfy all tastes and to suit all purses.

In classic architecture metal work played but a small part, but during the middle ages, with the advance in the art of metal working, this element of decoration attained great prominence and development. On this continent social and commercial conditions were unfavorable to the development of architecture and the allied arts, except to a slight extent during the Colonial period, until comparatively recent years. In a new country like our own the growth of taste in household art and the appreciation of the right use of art work come only with increase of leisure and the relaxation from daily business; but, as the influence of culture, art, and travel grows daily more powerful, so the great

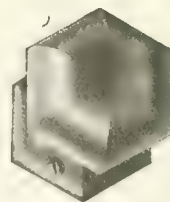
Examples of Hardware from Various Periods



Adams.



Colonial.



Mission.



Colonial.



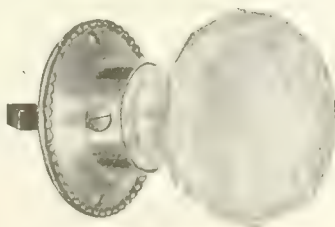
Colonial.



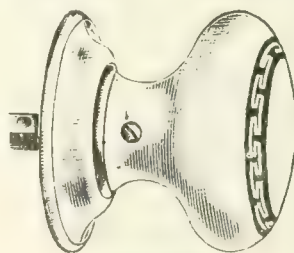
Colonial.



Mission.



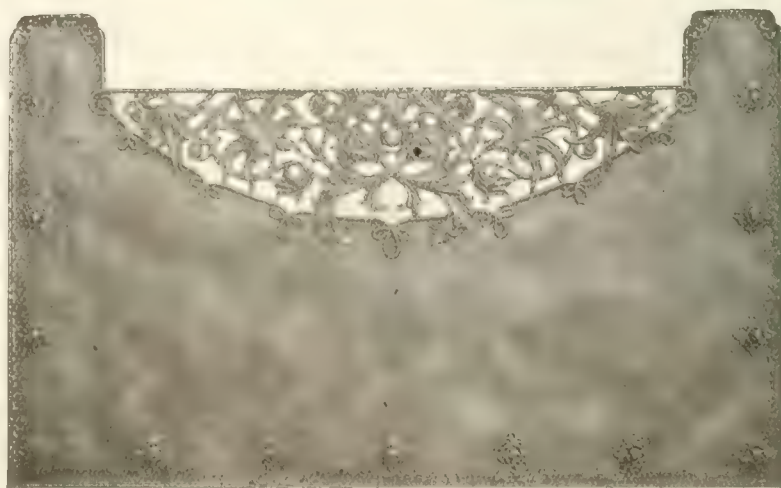
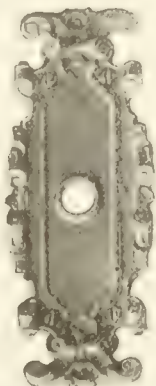
Cut glass.



White china.



Elizabethan



Kick plate of Italian Renaissance.

tide of public sentiment follows the lead which only a brief time before seemed far in advance. Instead of looking only to art galleries and public collections for examples of art work, and being content with an occasional glimpse of some rare bronze or exquisite forgings through the panels of a cabinet, the owner demands not only possession, but also the daily use of the articles which, a few years ago, would have been cherished in some museum of fine arts.

When the householder of to-day seeks a new home he calls to him the architect, to prepare plans and elevations, and to put into practical form for construction the ideas which he has in mind, and also to guide by counsel and experience the plans which he hopes to see realized in the completed building. In all this work the interest increases as the house approaches completion, and not the least interesting portion of the work is the selection of the metal trimmings and ornament. In this branch of the decoration of the house the new order of treatment is a revelation to many, and often the client, from lack of information, fails to profit by what has already been done by specialists in art metal work. It is here that the systematic production of art metal work for household use and decoration, made under all the favorable conditions of organized manufacture, enters the field to give practical solution to the problem of the union of the artist and the artisan, and it is by such means that the modern house beautiful is enabled to bear at every turn the products of artistic taste in bronze, brass or beaten iron.

Good Idea to Consult Sample Rooms of Hardware Dealers

It is most important that a long-established and reputable hardware house be consulted when finishing hardware for your residence or client's residence is to be bought. A firm, with a reputation to keep up, will have some capable employes who are both artists and artisans, and with their experience in decorative art metal work, are best able to give advice as to the utility and decorative qualities to be obtained in hardware. Valuable suggestions will be given as to ways and means by which the residence being constructed can be beautified and improved, both mechanically and architecturally, by the hardware. Samples of designs and finishes will be submitted for the asking, and many ideas may be obtained by the architect or client.

Hardware for Entrance Door

Too much care cannot be taken in the selection of the hardware for the front entrance door, as the first impressions are formed there by all visitors. It is necessary that a design be chosen that suits the architecture of the residence without lessening the utility. The finish also is important on exterior doors. The atmosphere rusts iron and oxidizes brass or bronze. However, the modern artisan again comes to our aid, and some finishes and effects can be obtained which are lasting.

Living Room

The massive furniture, beamed ceilings, and general substantial appearance of the living room should be carried out in the hardware. Its chief characteristics should be simplicity of form, in the use of flat surfaces, and a reliance on contour rather than upon ornament, the latter being emphatically placed when in use at all. The most suitable finish is a dark or statuary bronze.

Reception Room

The decoration of reception rooms is usually marked

by delicacy of pattern in outline, and a conventional use of the classic bead and pearl, or bead used to delicately outline large patterns. An escutcheon plate from the Adam's School of Architecture is illustrated, and, when finished in polished gold, is admirably adapted for use in all reception rooms trimmed in white enamel.

Dining Room

A dining room, plain but rich in appearance, with its mahogany trim, is invariably furnished with dull silver hardware, which has a beautifully soft appearance on the mahogany and yet harmonizes with the silverware and lighting fixtures in the room.

Music Room

The music room affords the owner a splendid opportunity to show his or her own individuality and taste. The finish of the hardware should be rich—but soft and velvety. A hard glaring finish like polished brass gives the room a harsh note, whereas a burnished gold or ormolu brass finish adds a note of harmony. The selection of design should be based on the architectural design of the room.

Library, Loggia, Etc.

Owing to the wide use of Mission period furniture in libraries and dens, the hardware should have the hammered iron effect, or some other typical Mission design. A dark oxidized finish will harmonize with the woodwork, which is usually fumed oak.

The hardware of loggias and conservatories, owing to the dampness of the atmosphere, would be in crystallized brass or verdigris finish.

The opalescent glass or white china are best suited for use in the servants' portion, as they are sanitary. They also match the porcelain sinks and general white appearance carried out in this portion of the residence.

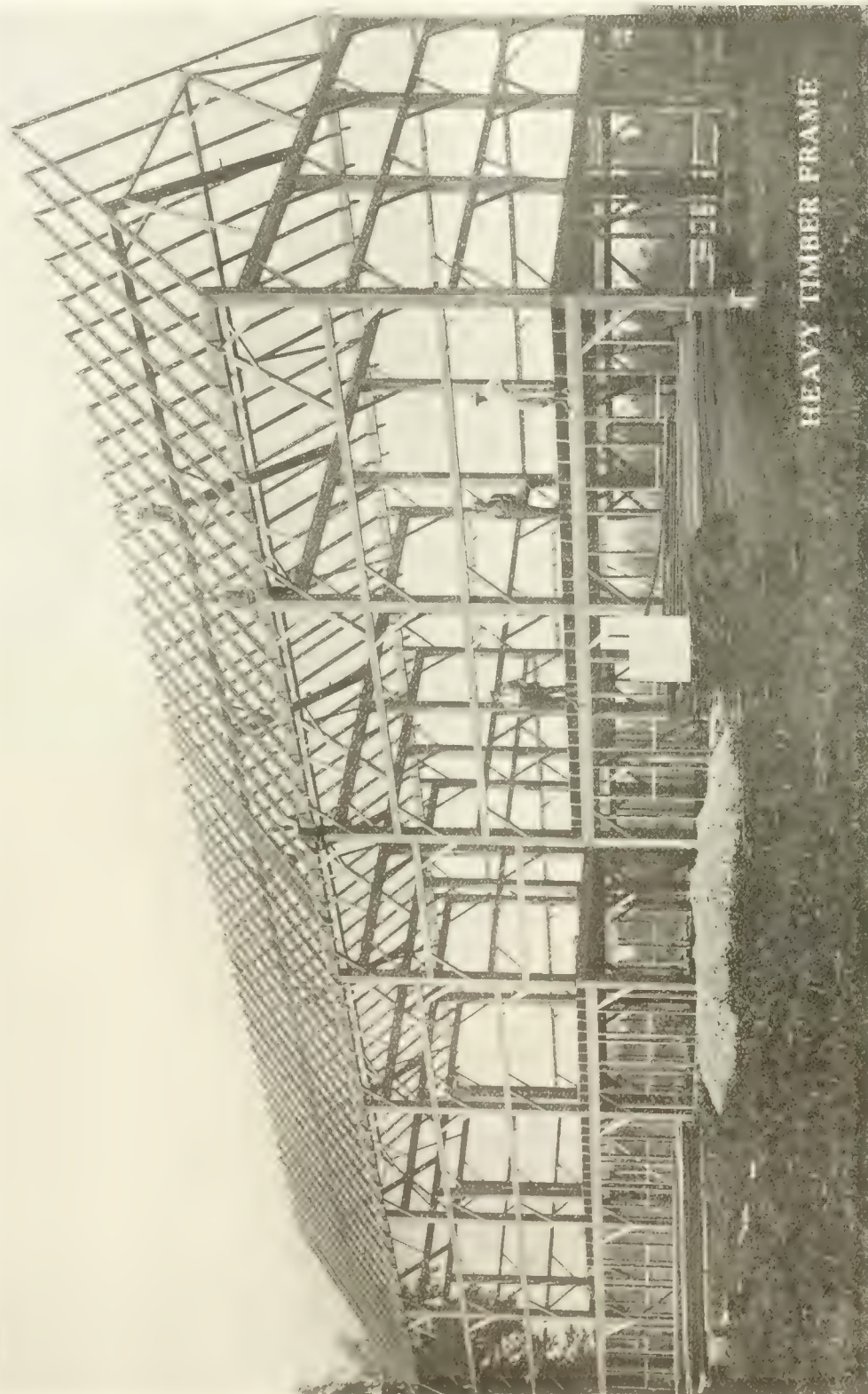
It is hard to lay down any set rule for the selection of hardware for the bedrooms, owing to the great many different types of decoration and color effects in use. Cut glass or a very fine grade of china with hand-painted designs are the most frequently used.

For attics and basements a strong, substantial lock with plain trim is most appropriate.

Importance of Good Hardware and Careful Selection

Owing to the fact that finishing hardware is one of the last expenditures made on a new building, the salesman is working at a great disadvantage. Twenty to thirty per cent. is often cut off the proper allowance in order to bring the total cost of the building down to the estimated cost of construction. Tapestries and draperies are bought chiefly as an ornament, to be replaced from time to time, whereas hardware has two functions. It must be mechanically perfect to insure the proper operation of doors and windows, artistically designed, to blend with the decorations, and strong enough to withstand all abuses. It is a permanent fixture and must stand as long as the residence, as it cannot be changed when once applied.

The writer's object has been to draw to your attention the possibilities of hardware as to decoration, and the importance of its careful selection. No other material entering into the construction of a building will pay a larger return, in satisfaction, comfort, and permanent economy, for time and care devoted to its selection, than the "finishing hardware." But, until lately, none has had less consideration.



Courtesy Batty Berns, Fergus, Ont.

HEAVY TIMBER FRAME OF BARN.

Erecting a Plank Frame Barn*

After the foundation is in and the frame for the first storey wall complete, the supporting columns are put in place, the proper footings for same having been provided. It is important that the footings be of ample size; if they are not, the building may settle, cracking the concrete floor and doing other damage.

We recommend metal columns, and when they are used the bottom of the column should be two to six inches below the finished floor line, depending upon the method of finishing the floor.

When these columns are in place and the concrete set, the girders may be laid.

The floor joists are next put in, and a temporary floor laid on them so that the workmen can move about freely while raising the trusses.

Cut and put together the first truss according to plan. When the first truss is completed, lay it on the floor and build the other trusses on top of it, to insure absolute accuracy in all joints and measurements.

When all the trusses have been finished, the first truss is placed in position at the end of the barn.

This is usually done by placing the feet of the truss at the place where they are to rest when in position, with the top of the truss towards the centre of the barn. Blocks are then spiked to the joists at the proper points so as to keep the feet of the truss in place while being raised; the feet of the truss rest against these blocks and pivot on them.

A gin pole is erected at the end of the barn in the centre, leaning at an angle of about 45 degrees toward the centre of the barn; a block and tackle is rigged, the rope passing over a gin pole and attached to the upper parts of the truss.

A horse or team is hitched to the block and tackle, and the truss quickly raised to position. A few men with guy ropes are necessary to steady the truss while being raised.

As soon as the first truss is up, it is braced in position.

The second truss is raised in like manner, and as soon as it is up the girts are added, as shown on the opposite page.

Then one after the other the trusses are put in place, the girts being spiked on as you go along. The last two trusses, when laid in position for raising, will project over the end of the barn. The projecting portion is supported by temporary props, which are removed

when the truss is being raised. The end girts can be added at any time convenient.

To put on the plates, no scaffolding is needed, since it is not difficult to climb on the truss itself.

The next step is to put the purlines in place, and raise to position with block and tackle.

Before putting on the rafters and cornice, the siding is nailed on, because it can be done more conveniently before the rafters and the roof boards are in place, there being nothing to interfere with nailing on the boards under the cornice.

Ceilings

When there is a loft overhead, stables should be ceiled perfectly tight, so no dust can get through. Close-fitting, tongued and grooved stock should be

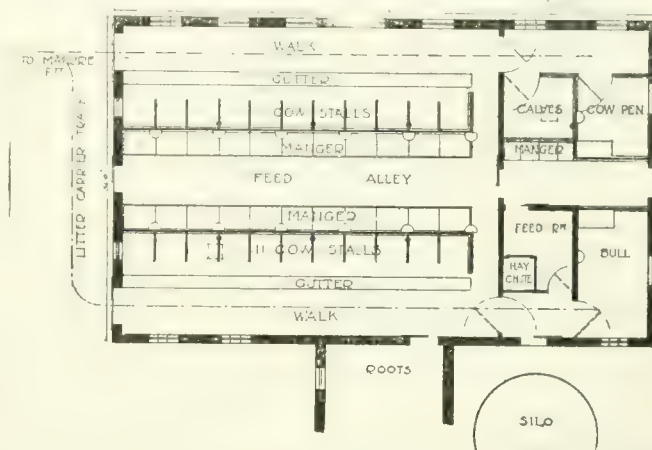


Fig. 2. Plan of barn shown in Fig. 1. It has room for 22 cows, etc.

used, protected by a layer of building paper just between lumber and joists. Sometimes metal siding has been used for the ceiling, but all that is needed is a plain, smooth surface that will not catch dust, harbor lice or collect cobwebs. Some people simply nail up a few wide boards for the purpose, but these shrink, leaving big gaps through which the dust falls.

Both ceilings and walls should be painted white or whitewashed, as the intensity of the light in the stable can be doubled in this way.

The height of the ceiling varies with the width of the barn and the climate of the locality. It should never be too high, or it will be difficult to keep up sufficient air current for effective ventilation without making the barn too cold. Eight feet is about the average height.

*Prepared by Beatty Bros., Limited, Fergus, Ont.

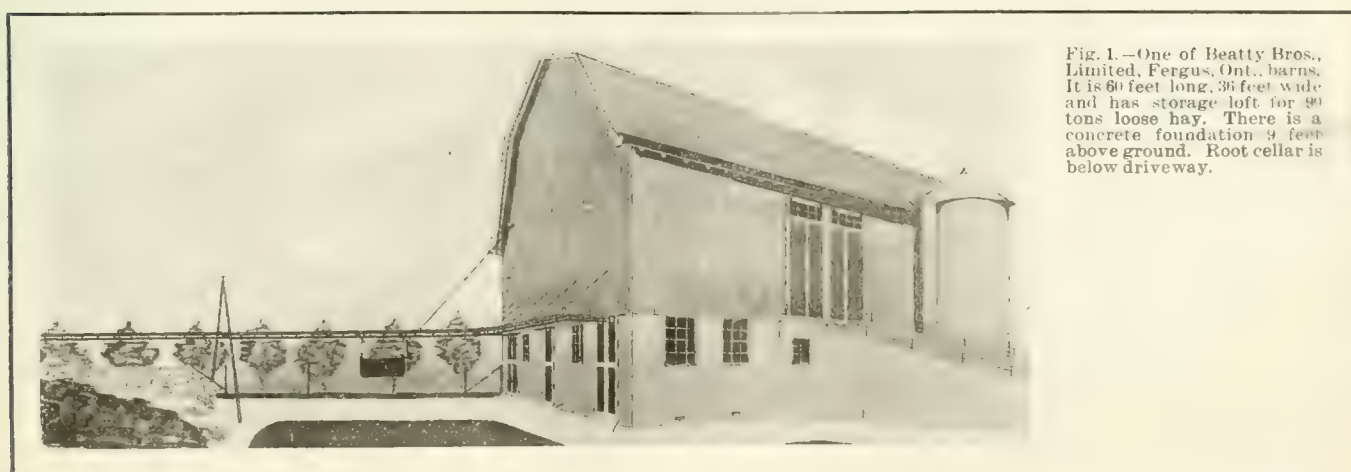
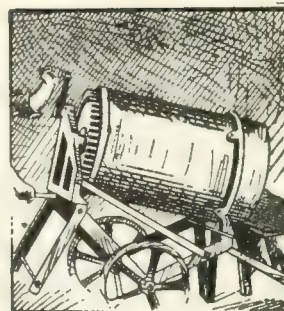


Fig. 1.—One of Beatty Bros., Limited, Fergus, Ont., barns. It is 60 feet long, 38 feet wide and has storage loft for 30 tons loose hay. There is a concrete foundation 4 feet above ground. Root cellar is below driveway.



Concrete Department



Small Mixers Prove Economical on Large Work

The growing use of tower and spouting systems having a centralized concrete plant sometimes results in a tendency to overlook conditions in which a less expensive construction plant would prove economical. This condition is illustrated by the construction methods used in the basement of the Methodist Book Co. building in Chicago, described in a recent issue of "Concrete." The foundations of this building are designed to carry four storeys and to accommodate printing presses. A basement 12 ft. 6 in. below sidewalk level is provided.

Pier footings, which are on concrete piles, are 9 ft. x 9 ft. at the base. Basement walls are approximately 13 ft. 6 in. high and the building is 125 ft. x 125 ft. The fact that this building is located on a corner and adjoins an alley, permitting operations to be conducted on three sides of the structure, suggested the use of small portable mixers, two of which were used. As concrete could be spouted from these mixers a considerable distance by moving them occasionally all the concrete in the retaining walls on the two streets and alley sides and a considerable part of the concrete on the inner retaining wall were spouted directly into the forms. The depth of the basement was such that two rows of pier footings could also be spouted directly from the mixers. Two rows of pier footings were thus constructed on three sides of the building and the remaining pier footings were poured by the use of concrete carts, which received the concrete from bins into which it had been spouted. Very little material was carted more than 50 ft.



Surface Finishing of Concrete

Concrete, on account of its plasticity, will always reproduce the markings or irregularities of the "forms" on its surface. Where the concrete surface is left exposed, and an artistic appearance is desired one of the following methods of treatment may be used:

Smooth Finish

This finish is obtained by depositing mortar next to the "form" and filling in back of it with ordinary concrete. A "slot" is formed by placing a steel plate, with "angles" attached to hold it vertical, at the desired distance from the "form." This slot is filled with mortar of the desired mixture and the concrete backing placed immediately. The plate is then raised and the mortar and concrete are firmly bonded together by ramming.

A cheaper method of obtaining this finish is by applying a mortar facing after the forms are removed, but this method is not to be recommended since a more permanent finish is possible. Where the first method is

used the surface is finished by rubbing or brushing, the "forms" being removed within 24 hours of placing the concrete.

Rough or "Exposed Finish"

In this finish either the small or large aggregates may be exposed. Where the small aggregate is exposed the wall should be "spaded," but where the large aggregate is exposed no "spading" should be done. As the color of the wall depends on the color of the aggregate, care should be used in selecting it, to give the wall a uniform variety of color.

The "forms" should be removed within 24 hours of placing the concrete and the surface scrubbed with an ordinary scrubbing brush or wire brush and water, removing all the mortar from the surface and exposing the aggregates in their natural color.

Where it is necessary to leave the "forms" on longer than 24 hours, the same finishes can be obtained by the use of a solution of muriatic acid or by means of a sand blast.

Dressed Stone Finish

After the mass has been thoroughly hardened it may be finished by bush-hammering.

Coloring

Sometimes various colored surfaces are desired. This can be obtained by using a "slot," as first described. Either a smooth or rough finish can be obtained, depending on whether mortar or concrete is placed in the "slot," and the surface finished accordingly.

The following table gives the color obtained, coloring matter used and quantity necessary. The dry concrete will have a lighter color than when wet.

Color desired.	Commercial names of coloring matter.	Pound of Color per bag of cement.	
		Light.	Dark.
Grays, Blue-Black and Black	Carbon Black	1/2	1
	Black Oxide of Manganese	1	2
Blue shade	Ultramarine Blue	5	10
Brownish-red to dull brick-red ...	Red Oxide of Iron.....	5	10
Bright Red to Vermilion	Mineral Turkey Red...	5	10
Red Sandstone to purplish-red	Indian Red	5	10
Brown to reddish-brown	Metallic Brown (Oxide)	5	10
Buff, Colonial tint and Yellow	Yellow Ochre	5	10



A Simple Method of Grading Aggregate

While much attention is being given to the study of aggregates by experts, any method that will help the man in the field to judge, at least approximately, the

best mixture, is valuable. Prof. A. B. McDaniel, in "Concrete," suggests the following:

First, pass the gravel twice over a $\frac{1}{4}$ -in. mesh screen to separate the sand and gravel or lesser and coarser aggregate. Then secure a stout cylinder such as a tile or section of pipe having a diameter of about 12 in. and a depth of from 12 in. to 18 in. Weight out 1 unit of cement, 2 units of sand and 4 units of gravel, being careful to have the whole mixture less than enough to fill the cylinder. With a cylinder of the size stated above, 15 lbs. of cement, 30 lbs. of sand and 60 lbs. of gravel would give suitable quantities. Mix the materials together and then add about 10 per cent. of water, to make a concrete of about normal consistency. Tamp the concrete into the mould, leaving the upper surface smooth and horizontal, and then measure the distance of the upper surface of the concrete from the top of the cylinder. Dump out the concrete and clean the cylinder and the tools. Using the same amount of cement, but different proportions and amounts of sand and gravel, make up other batches into the cylinder in the same way. Tamp each batch into the cylinder in the same way and measure the depth of concrete as described for the first case. Several trials can be made and the proportions determined that give the least depth of material in the cylinder.

A dry mixture is unfit for use in rubble concrete or concrete rubble, because it will not flow around the large stones and coat them with cement.

Stairway and Elevator Inclosures

At the present time there are two types of metal lath and plaster partitions which are being used for inclosing stairways and elevators. One is the $2\frac{1}{2}$ or 3-in. thick solid plaster and metal lath partitions and the other is the 4-in. thick hollow partition. Laboratory tests and observations of behavior in actual severe fires show that the solid partition provides ample protection. Some designers, however, prefer to have the added factor of safety that is secured through the air space of the hollow partition, says a recent issue of Expanded Metal Construction. The supports for the partitions consist of $\frac{3}{4}$ or 1-in. steel channels securely fastened at the floor and ceiling. The lath is wired to these channels and Portland cement plaster is applied to both sides of the lath on the solid partition in successive coats until the desired thickness is obtained. In the case of the hollow type the plaster is applied to only one side of the lath. The construction is such as to make a partition that is in every way satisfactory for the purpose.

"Handy Mixer" for Small Jobs

The London Concrete Machinery Co., London, have placed on the market a small-sized machine, known as the "Handy Mixer," which will be of interest to three different parties—(1) for the man having small concrete jobs, (2) the bricklayer, and (3) the plasterer.



**\$250,000.00 JOB
PUT IN ENTIRELY
WITH LONDON MIXERS**

A large job showing how concrete mixers were used. (Courtesy London Concrete Machinery Co., London.)

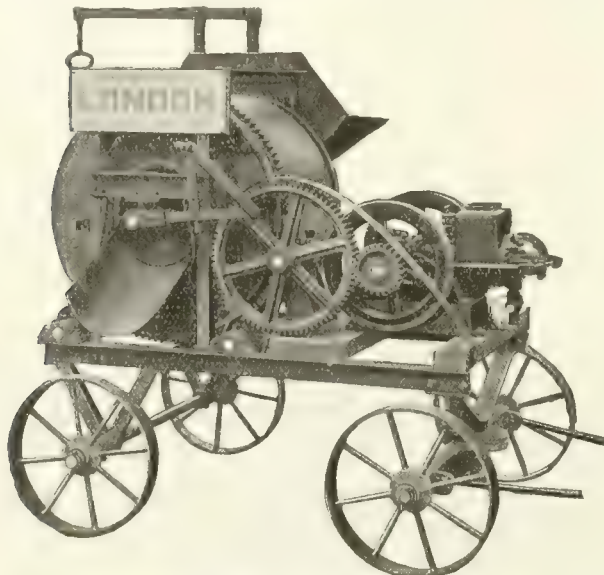
The makers claim that this mixer will prove economical on any job requiring less than 40 cubic yards per day.

This machine will prove a good adjunct to the larger machine, since on small jobs it can be easily moved. Also it does away with the expensive hand-mixing method.

Construction and Capacity of "Handy Mixer"

The London "Handy Mixer" is constructed substantially the same as the larger mixers. It is built entirely of steel, the drum tracks and drum rolls being chilled. The drum gear racks are removable. The entire machine is put together with hot driven rivets and the frame is of rigid bridge construction. It is equipped with 2 h.p. gasoline engine.

As will be seen in the illustration, the "Handy Mixer" is equipped with a batch charging bin, the materials being thrown into it and discharged into the drum by simply pulling a lever. While the drum is mixing, the men can refill the charging bin and there-



"Handy Mixer" placed on the market by the London Concrete Machinery Co., London.

by have another batch ready for the drum the moment it is emptied. This feature gives this mixer a large capacity. It will mix 4 cubic feet at a batch and has a daily capacity of 40 cubic yards. It can be operated by one man if desired. A conservative estimate for one man in nine hours would be 15 cubic yards of concrete.

The makers state that if used to its full capacity, it will not use over one gallon of gasoline per day. It can be moved from one job to another by two men on level ground or may be hitched behind any wagon or automobile.



Shrinkage of Reinforced Concrete

F. R. McMillan, of the University of Minnesota, has been making a number of tests to determine the shrinkage and time effects in reinforced concrete. According to a summary of his paper, by A. A. Klein, published in Chemical Abstracts, the following results were obtained:

Beams tested were 5½ in. deep, 30 in. wide and 12 ft. long between supports. Concrete consisted of 100 lbs. cement, 2 cu. ft. sand, 4 cu. ft. stone, hand mixed. Results show that shrinkage of ¾ in. to 1 in. in 100 ft.

can be predicted when concrete is exposed to the ordinary dry air of a heated building. Changes in moisture content will retard shrinkage and even cause swelling. The yielding of concrete under compressive stress with time is greater as the unit stress is greater and goes on indefinitely. The deformation was found to be 3-5 times that produced immediately upon application of load. The time yielding under stress combined with shortening due to shrinkage may result in deformations 15-20 times those expected from calculations.



The Cost of School Buildings

How much should school buildings cost? A helpful answer to this question is given in the Cleveland Foundation Survey Report on "School Buildings and Equipment." Increasing population is making cities spend more regularly each year for school buildings than for any other permanent improvements. Yet, it is stated, until this report no standard has existed for deciding how much it ought to cost to house any given number of new pupils.

The Cleveland Survey establishes an important measuring scale by compiling the costs of all the fire-proof school buildings of the last few years in Boston, Cleveland, Detroit, Newark and St. Louis. These cities pay per pupil for new schools \$210, \$175, \$125, \$156 and \$209, respectively. The number of pupils housed is based on 18 square feet of class room space per pupil.

The report points out that the cost per pupil based on class room space fails to tell the whole story. For schools of to-day furnish, or should furnish, much educational equipment other than regular class rooms. Gymnasiums, libraries, kitchens, shops, auditoriums, dispensaries and swimming pools are among these modern requirements. So in figuring what a city gets for its school building money the amount of these special rooms should be considered.

Figures are given to show how much special equipment each day provides, and then how much school buildings cost, giving due consideration to the "extras."

	Special rooms for every 20 class rooms.	Average cost per room, special and class.	Average cost per cubic foot
Boston	6.2	\$6.012	\$0.256
Cleveland	13.5	4.678	0.171
Detroit	7.4	3.629	0.156
Newark	4.7	5.232	0.196
St. Louis	7.0	6.584	0.193

A source of high or low cost is shown in the per cent. of total cost paid for plans, specifications and supervision for building. Taking all factors into account the five cities compared rank as follows in economy in school buildings: Detroit first, Cleveland second, Newark third, St. Louis fourth, and Boston fifth.



Duty Payable on Hydrated Lime

The Customs appraiser has ruled that hydrated lime is declared to be dutiable under Tariff Item 293, as prepared wall plaster. The duty is as follows:

British	Preferred	General
8	11	12½

To this must be added the war tax of 5 per cent. to tariff on imports from Britain and 7½ per cent. on imports from other countries.



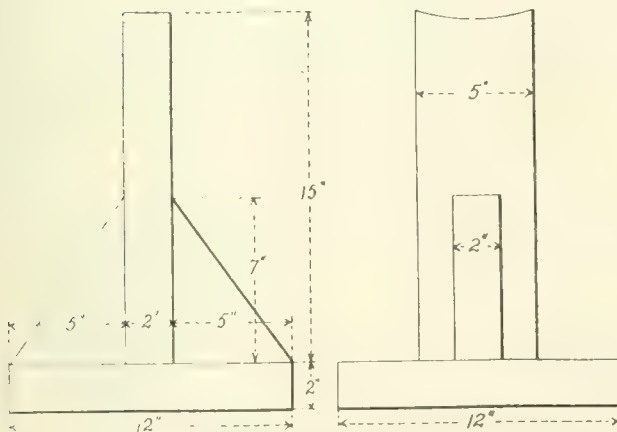
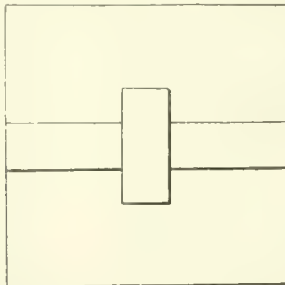
Carpentry and Woodworking



Jack for Motor Car

With the increased use of motor cars Canadian carpenters can find a profitable field among garages and motor owners for motor jacks to keep cars from standing on the tires. The following description is from a motoring paper:

As may be noted, the base is made from a piece of two-inch plank, 12 inches square, and fitted to this is an upright, the top part of which is recessed. This groove is essential, as it will prevent the axle from



Working plan of the stand.

sliding off the support. The upright is made of a piece of 2x5 joist, one end of which is nailed to the base piece. The upright is made substantial by using two triangular braces, five inches wide and seven high.



How to Shingle a Roof

If you want a roof that is a roof in every sense of the word, writes G. M. Keepauver, in the American Lumberman, place your rafters 2 ft. on centres of 2 x 4 or 2 x 6, depending on the length to be spanned. Sheath with a good grade of 1 x 6 s2s; nail with common 8d galvanized wire nails.

Use a premium red cedar 5 to 2 shingle, clear and vertical grain; start at the bottom of the roof with a

double course, line or use a straight edge every 4 or 4½ in., this being the amount showing to the weather. Split all shingles of extra width. Do not nail closer than 6 in. to the bottom of each course, nor closer than 1 in. to the edge of each shingle. Break joints not less than 1 in. Never have the roof flatter than one-third pitch; steeper will last much longer. Have the shingles moistened before laying to prevent cupping and warping.

Do not crowd them too closely, as this is a hindrance instead of a benefit. Use the old style cut, the triple galvanized or zinc-coated nail. Past records have proven beyond doubt that this type of a roof is the cheapest and most lasting. It will resist heat and cold and all of the other elements better than any other roof known to-day.



Decorating Fibre Board

The Fibre Products, Toronto, give the following information regarding the decorating of fibre board:

Canada fibre board can be decorated at once with any style of decoration desired—paper, oil paint, water paint, kalsomine or burlap, and there is never any danger of lime stains spoiling the paper or paint, as often happens with plaster. Very rich effects can be obtained on it with all kinds of paints. The surface is so finished that it gives a beautifully rich matte or burlap effect when painted. It is particularly adaptable to the panel idea of decoration that is so popular at the present time. Very artistic effects can be obtained by paneling it with narrow strips of moulding when paint is used for decorating.



Heating Lumber Before Gluing

When a man is told that it is a good thing to warm wood before gluing, it is of course meant that he should do it moderately. But there are those who think that if a little heat is good a whole lot more would be just that much better; and they heat it as hot as possible with the facilities at hand. These men go to an extreme, throw the whole thing out of balance and defeat the very object they have in view.

Warming wood slightly before gluing brings it into conformity with the temperature of the glue. It also slightly opens the pores and gives the glue a better chance to enter and take a firm hold. The cooling of the wood and glue, and the hardening of the latter, progress uniformly under these conditions, because there is the proper balance. But where the wood has been heated hot, the pores are unduly expanded and the wood rapidly sucks the moisture from the glue, leaving it too dry to successfully resist the burning effect of the wood. Remember that the effect of the heat is intensified greatly when the glue is under pressure. The re-

sult is that the glue becomes hard and brittle, and at the first strain gives way and the joint comes open—all because things were thrown out of balance.

At no time should the stock be heated to a higher temperature than 95 deg. F. It is not necessary to heat properly kiln-dried stock nearly that much, as a temperature of 70 deg. will give splendid results. In fact, if the stock is well dried and properly cured afterward, and the rooms in which the stock is and the work is done never reach a lower temperature than 70 deg., it is quite safe to do the gluing without heating the wood. But this can only be done in the winter time, remember, where the factories are well heated day and night. Of course, it is not necessary to heat the whole factory for this purpose. If the curing room and the glue room are thus heated, all the requirements in this respect are met.—Parker Penrose, in *Woodworker*.

※ ※

A Scheme for Gluing Mitres

A convenient way of gluing up a mitered frame, and one that can also be used to advantage by amateurs, consists of four corner blocks which exert an even pressure by merely twisting a picture wire or strong twine, as shown in the illustration. The blocks can be used for any size frame. Their exact dimensions are of no great importance.

Fig. 1 shows the face (plan) and edge (side elevation) of one of the blocks. A piece of wood 12 in. long, 2 1/4 in. wide and 7/8 in. thick is all that is needed. Before cutting off the blocks it is best to bore the required holes; 3/4 in. holes through the thickness of the stuff and 3/8 in. through the width. The shaded part (in plan) is cut away at right angles. The sharp corners formed by the edge and the 3/8 in. holes should be

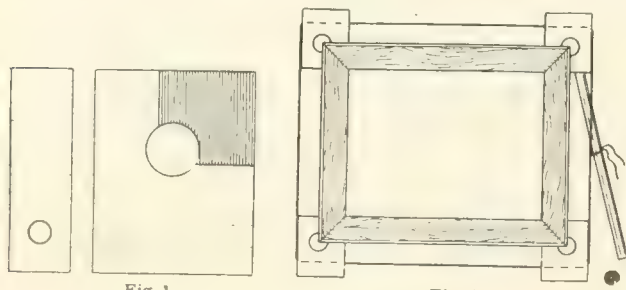


Fig. 1.

A scheme for gluing mitres.

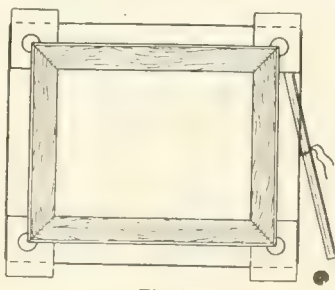


Fig. 2.

slightly rounded off, to allow the free passage of the picture wire or cord, which is passed through these holes.

Before applying any glue the frame and blocks are put in position, and the cord is passed through, so that a knot can be tied at the lower end. Insert a stick of wood between the knot and frame, as shown in Fig. 2, and twist the twine taut by turning the stick. Apply only slight pressure at first. Hold the stick with one hand and with the other adjust the blocks and miters, also see that the latter fit properly.

When about to glue the frame, place the blocks in their approximate positions, leaving the knot intact, of course, and after adjusting the miters proceed to twist the twine a little more; but there is no need of overdoing it. As to the gluing itself, it may not be amiss to say that a good plan is to apply fairly strong, hot glue to the miters of two opposite pieces only, and heat only the other two pieces.

It may be necessary to raise the frame or the blocks

from the board, according to the thickness of material, to get the pressure near the centre. In case the edge of frame is not square, it is advisable to fit a piece of softwood, about 8 in. long, 1/4 in. thick, and of such a width as to come square with the extreme edge of frame. Short pieces of this strip are then glued to the blocks.—C. Schapmeier, in *Wood-Worker*.

※ ※

Rendering Shingles Fire Retardant

A method of rendering shingles fire retardant, developed at the Forest Products Laboratory, Madison, Wis., consists essentially in treating the air-dried shingles with a solution of borax in water. The shingles are then dried to about 10 per cent. moisture and a second treatment with a zinc chloride solution is applied. The shingles are again dried and are then ready for use.

Theoretically, the process depends upon the formation of an insoluble salt by the zinc chloride and the borax, namely, zinc borate. This salt is practically insoluble in water and when heated to a high degree fuses and coats the cell walls, rendering them fire retardant. Shingles treated in this manner and soaked in running water for two weeks still retained their fire retardant properties. When subjected to high temperature the treated shingles will burn, but without a flame, fire will not spread from one portion of the roof to another in case fire brands fall upon it.

※ ※

Douglas Fir Wins in Test

Two Douglas fir and two red cedar railway ties were recently forwarded by the Forest Branch of the Department of Lands to the Great Eastern Railway Company of England, who selected two sleepers which they obtained from the Baltic, and tested them all under similar conditions.

The results of these tests show beyond a doubt the superiority of British Columbia Douglas fir for railroad ties.

It was found that under compression Douglas fir will stand 5,695 pounds per square inch; while red cedar made a very creditable showing against the Baltic timber of 3,407 pounds per square inch.

Tests in tension were even more favorable for Douglas fir. This is shown by the fact that it would take 11,450 pounds or over 5 1/2 tons to pull apart a stick of Douglas fir having a cross section of one square inch; whereas just half that weight would suffice to pull apart Baltic timber, and only 3,300 pounds were required to separate cedar.

These tests were carried out by the Great Eastern Railway, and the results which they found will be of immense value to the reputation of Douglas fir as a railway tie material amongst English engineers. The importance of this is increased by the fact that English engineers have the supervision of most of the railway lines in China, India and South Africa, all of which are valuable markets for Douglas fir.

※ ※

The owner who has a habit of bewailing the scarcity of real, competent help might put in some of his time to advantage in investigating the merits of those working for him, and encouraging those who deserve promotion.

Milton Rug Brick

When planning to build you simply cannot afford to overlook our Milton Rug Brick.

This is a rough textured brick, very hard, clean cut and uniform in size. The soft blending of color gives a wall the beautiful appearance of an old Persian Rug.

Architects are unstinted in its praise and tell us that it is the most artistic brick on the Canadian market.

Milton Rug Brick are suitable for any class of building, but particularly so for bungalow or colonial style of architecture.

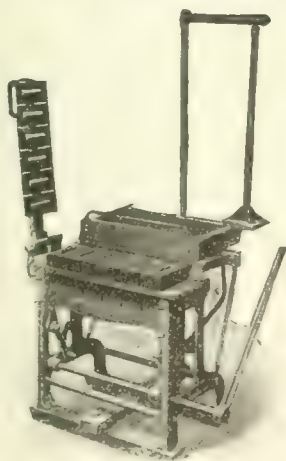
They also make a handsome fireplace and can be had in colors to tone with rugs and woodwork.

We would extend a cordial invitation to visit our Toronto showrooms or will express samples on request. When you see the brick you will be surprised at the modest price quoted.

MILTON PRESSED BRICK CO., LIMITED

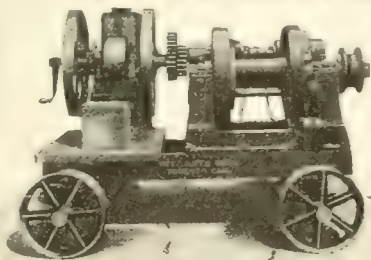
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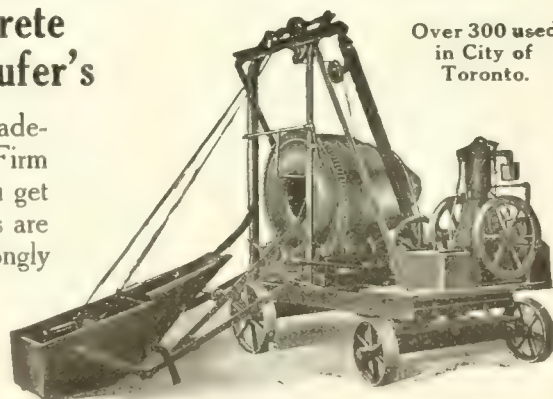
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TORONTO, ONT.



Over 300 used in City of Toronto.



No. 0. Hand Mixer, latest model Pays for itself in 7 days.

News From Coast to Coast

Suggested Scale of Wages for Montreal

At a joint meeting of the Builders' Exchange and the Building Trades' Council, held in Montreal recently, the following schedule of rates was suggested to the Board of Control for the year 1916: Stone masons, 40c.; bricklayers, 45c.; structural iron workers, 30c.; ornamental iron workers, 27½c.; plasterers, 40c.; lathers—metal, 40c.; lathers—wood, 35c.; hoisting engineers, 35c.; tile setters, 45c.; plumbers, 40c.; steam fitters, 40c.; steam fitters' helpers, 25c.; carpenters, 35c.; stone cutters, 45c.; marble cutters, 40c.; marble setters, 40c.; painters, 30c.; sheet metal workers, 35c.; roofers, 35c.; electrical workers, 35c.; cement finishers, 40c.; elevator constructors, 35c.; laborers—common, 20c.; laborers—hod carriers, 22½c.

✻ ✻

Toronto Builders' Exchange Pass Registration Resolution

The Toronto Builders' Exchange, at one of their recent meetings, passed the following resolution, which was forwarded to Ottawa:

"Resolved that the Builders' Exchange believe it to be in the best interests of all that a registration of the manhood of Canada should be taken by the Dominion Government; that further, the co-operation of the Board of Trade and manufacturers and employers' associations be invited to this end; and that in the meantime, the public at large should be urged to send to the officers of the several battalions now recruiting the names and addresses of any they know to be eligible for overseas service."

✻ ✻

Mr. Nelson West Honored by Exchange

Mr. Nelson West has joined the 111th South Waterloo Battalion. On resigning the secretaryship, the members of the Builders' Exchange of Galt, Preston and Hespeler presented him with a purse.

Mr. Frank McAuslan succeeds him as secretary.

✻ ✻

Report Business Good

Bird & Son, whose roofing and wall board factory is located at Hamilton, report business prospects for 1916 as exceptionally good. Building operations and repairs, especially on the Western farms, have been more or less held up during the last two years, and now, with money flowing more freely again, and prosperity assured, extensive repairs and new buildings are being pushed rapidly.

Bird & Son are well posted as to actual conditions throughout the country, having branches in all important Canadian cities.

✻ ✻

Facts About Concrete

The Canada Cement Co., Herald Bldg., Montreal, have published a handbook giving information in concise form on the methods of using concrete, mixing,

placing, waterproofing, surface finishing, etc., and its use for walls, walks, and repairing. It is a very useful little volume which builders will find handy for reference.

✻ ✻

Short Items of Interest

The Dominion Government and the C.P.R. have decided to use Canadian timber exclusively.

✻

The Cast Stone Block and Machine Co., Limited, Windsor, Ont., have issued a booklet describing the cast stone system of manufacturing granite veneered cement building blocks. The booklet is well illustrated throughout with various types of block and machinery manufactured by this company.

✻

The London Concrete Machinery Company, of London, Ont., have secured the contract to furnish six ½-yard batch mixers to be shipped to Les Fils de Jules Weitz, of Lyons, France, and one from the Chatham Cement Tile Co., with one 10 cu. ft. batch mixer to be used in their Chatham plant.

✻ ✻

New Bird Roofing

A new development in roofing material for homes is being shown by Bird & Son, who operate a large factory for roofing and wall boards at Hamilton. It consists of an asphalt-saturated felt base with crushed slate surface, and made twice the size of an ordinary shingle. It is claimed for the shingle that it is not only as handsome as slate, but it is economical as to cost, very durable, and resists fire; easy in application on account of uniform size.

The new shingle is being marketed in conjunction with the firm's Paroid roofing and Neponset wall board.

✻ ✻

Beatty Bros. Barn Book

Beatty Bros., Limited, Fergus, Ont., are distributing a valuable book, No. 26, dealing with barns. Full details of the lines manufactured by them are illustrated and described. A large number of views are given of barns which have been erected and details are shown and described. The photographs have been taken in every province. The details of construction are presented in such a way as to be easily read and understood. There are 336 pages, bound in hard covers. It will make a valuable addition to your catalogue file. The company state that they will be glad to mail it to anyone remodeling or building barns. To such it will be found a good source of barn information.

✻ ✻

Catalogue Review

Elliot Woodworker—A pamphlet of the Elliot Woodworker Co., cor. College and Bathurst Streets, Toronto, describes their woodworker and the attachments for various work. A claim is made that this machine will greatly reduce building costs. The circular is worth being studied by builders and carpenters.

Everything in Concrete Machinery

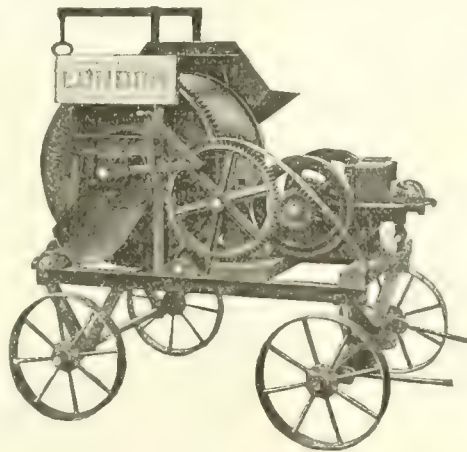
Made in London, Canada

London Handy Concrete Mixer

A small-sized power-operated concrete mixer, suitable for all kinds of work, and which can be had at moderate price. Such a machine is the London Handy Concrete Mixer.

This is the machine you should have for small jobs. With it the cost of mixing concrete is one-third that of hand labor. It also saves cement and makes a better job.

The place for this machine is on jobs requiring not more than 40 cubic yards per day which is machine's capacity. The drum mixes 4 cubic feet at a batch. The machine can be operated by one man if desired. An average capacity of 15 cubic yards for each man, nine hours, is a very conservative estimate. No other small-sized machine has over half the capacity of the "Handy."



Plastering Contractors and Bricklayer Contractors can't afford to be without this machine. It mixes any kind of plaster to perfection at one-fourth the cost of hand labor. One man with this machine will mix as much mortar as four men can with the hoe, and the bricklayers can lay up 8 per cent. more brick.

The saving in material and in labor will soon pay for the London Handy.

We guarantee that this mixer, if used to its full capacity, will save the price of itself over hand mixing in 15 days' use; and on the smallest kind of work it will save the contractor the price of itself twice in a season.

Send for Catalogue No. 1-K

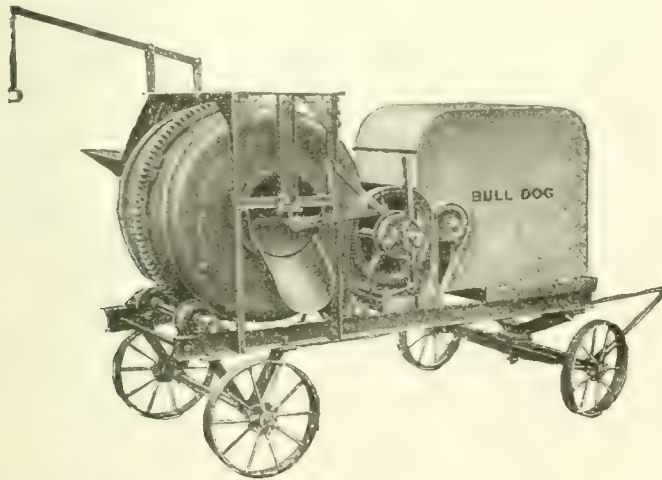
London Bull Dog Batch Mixer

This is another Small Machine with a Big Capacity, a Long Life and a Small Price. Its capacity is 6 cubic feet per batch, and has an average capacity of 50 cubic yards per day.

If the "Handy" mixer is not quite large enough, the "Bull Dog" will certainly fill your requirements on small jobs.

This machine is in use in every country in the world where concrete is mixed; and because of large number built, the cost has been reduced to a minimum.

Send for Catalogue No. 1-B



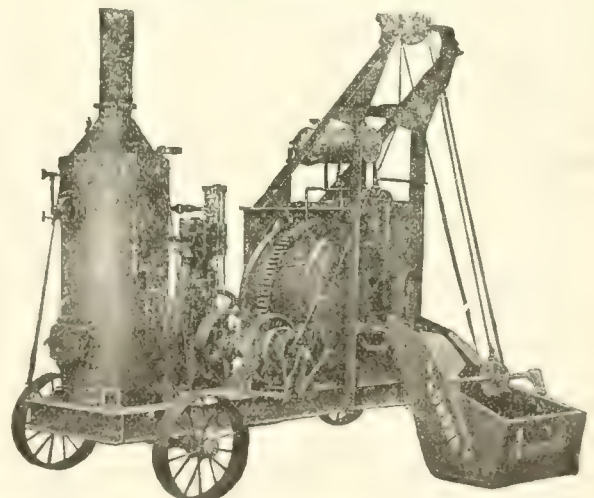
London Standard Drum Batch Mixer

This is a high grade machine, built in six of the larger sizes. Capacities per batch—No. 7, 7 cu. ft.; No. 10, 10 cu. ft.; No. 14, 14 cu. ft.; No. 21, 21 cu. ft.; No. 30, 30 cu. ft.; No. 70, 70 cu. ft. London machines are built to last a lifetime. Over 2,200 mixers in use.

The machine is constructed with different equipment to suit various requirements.

Send for Catalogue No. 1

Mention the Canadian Carpenter and Builder when writing.



London Concrete Machinery Co., Limited

London

Ontario

World's Largest Manufacturers of Concrete Machinery and Cement Working Tools

Price List of Building Materials—Revised to Date

EDITOR'S NOTE—Great care is exercised in obtaining prices for this department. They are as accurate as it is possible for us to make them. We know, however, that because of varying conditions, different dealers' prices are bound to vary somewhat; and our purpose in publishing this department is to give readers an idea of prices, rather than absolutely definite information.

PRICE AT MONTREAL

Hemlock Lumber

2 x 4 in. to 2 x 12 in., 8 to 14 ft.	\$24.00
2 x 4 in. to 2 x 12 in., 16 ft.	26.00
2 x 4 in. to 2 x 12 in., 18 ft.	28.00 to 30.00
1 in. hemlock No. 1	22.00
No. 1 hemlock decking	23.00 to 25.00
No. 2 hemlock dimensions and 1 in. ...	26.00 to 30.00

Pine

1 in. common and better pine 8 to 12 in. wide, rough.	\$32.00 to 40.00
2 in. white pine, mill stock	29.00 to 33.00
7/8 x 8 and 10 in. pine shelving	36.00 to 45.00
7/8 x 12 pine shelving	42.00 to 50.00
No. 1 white pine flooring	40.00
No. 1 spruce flooring	30.00
No. 1 pine decking, D2S	40.00
No. 1 pine V. or beaded sheeting	40.00
No. 2 pine V. or beaded sheeting	30.00

Pine Trim for Paint Finish

4 in. casing, per 100 ft.	\$1.75
5 in. casing, per 100 ft.	2.10
8 in. pine base, per 100 ft.	3.25
10 in. pine base, per 100 ft.	4.20
4 in. pine window stool, per 100 ft. ...	2.75

Shingles, Lath, Roofing, Etc.

No. 1 pine lath	5.00
No. 2 pine lath	4.50
No. 1 spruce lath	4.00

Cedar Posts—Fence

5 in. at small end	5c. foot
7 in. at small end	7c. foot

Hardware

Nails, wire, common	\$3.70 base keg
Nails, cut, common	3.20 " "
Sash weights, cast iron	1.90 per 100 lbs.
Tarred felt paper43 roll
Building paper35 roll

Brick, Tile, Terra Cotta, Sewer Pipe

No. 1 dry pressed red bricks	17.00
No. 1 dry pressed buff bricks	21.00
Red stock bricks	11.50
Grey stock bricks	12.00
Wire cut brick for foundation work...	10.00
Fire brick	25.00
Sewer pipe, 4 inch	10c. foot
Sewer pipe, 6 inch	15c. foot

Cement, Plaster, Stone, Etc.

Cement (bags extra)	1.90 bbl.
Sand, for cement or brick work95 ton
Lime38 per 100 lbs.
Hydrated lime	10.00
Mortar color	6.50 bbl.
Plaster of paris	3.75 "
Crushed stone, 2 in.	1.40
Crushed stone, 1 in.	1.00
Crushed stone, 3/4 in.	1.75
Hardwall plaster	\$6.50 per ton
Gravel	1.35 yard
Hair (plaster)08 per lb.

PRICE AT TORONTO

Hemlock Lumber (Sized)

2 x 4 in. to 2 x 12 in., 8 to 14 ft.	\$24.00
2 x 4 in. to 2 x 12 in., 16 ft.	24.00
2 x 4 in. to 2 x 12 in., 18 ft.	28.00
1 in. hemlock, No. 1, 6 in. wide.	24.00
No. 1 hemlock decking	26.00
No. 2 hemlock dimensions and 1 in. ...	19.00

Pine

1 in. common and better pine 8 to 12 in. wide, rough	\$25.00 to 33.00
2 in. white pine, mill run	29.00 to 34.00
7/8 x 8 and 10 in., pine shelving	33.00 to 40.00
7/8 x 12 pine shelving	45.00 to 48.00
No. 1 white pine flooring	33.00
No. 1 spruce flooring	27.00
No. 1 pine decking, D2S	28.00
Spruce decking	27.00
No. 1 pine V. or beaded sheeting	35.00
No. 2 pine V. or beaded sheeting	32.00

No. 1 Common Long Leaf Yellow Pine

2 x 4 in. to 2 x 14 in., 10 to 16 ft.	\$31.00 to 43.00
2 x 4 in. to 2 x 14 in., 18 to 20 ft.	33.00 to 45.00
2 x 4 in. to 2 x 14 in., 22 to 24 ft.	35.00 to 47.00

Yellow Pine Finish

4/4 x 6, 8, 10 and 12 B. & B. smoke dried	\$45.00
5/4 x " " " " " "	52.00
6/4 x " " " " " "	52.00
8/4 x " " " " " "	60.00
4/4 x " " " " " steam dried	48.00 to 52.00
5/4 x " " " " " "	50.00 to 55.00
6/4 x " " " " " "	50.00 to 55.00
8/4 x " " " " " "	60.00 to 65.00

Pine Trim for Paint Finish

4 in. casing, per 100 ft.	\$1.75 to 2.00
5 in. casing, per 100 ft.	2.00 to 2.50
8 in. pine base, per 100 ft.	2.75 to 3.25
10 in. pine base, per 100 ft.	3.80 to 4.50
4 in. pine window stool, per 100 ft. ...	3.00

Hardwood Trim, Flooring, Etc.

Quotations will be given on request.
See editor's note above.

Shingles, Lath, Roofing Etc.

XXX B. C. cedar shingles	\$3.50 per M
N. B. extras	4.00
No. 1 pine lath	5.00 to 6.25 per M
No. 2 pine lath	4.75 to 5.25
No. 1 spruce lath	4.25
Roofing	1 ply—\$1.60 per sq.
	2 ply— 2.25 "
	3 ply— 2.50 "

Cedar Posts—Fence

5 in. at small end25 each
7 in. at small end50 each

Hardware

Nails, wire, common	\$3.65 cwt.
Nails, cut, common	3.20
Sash weights, cast iron	2.00
Tarred paper60 roll
Building paper, plain60

NOTE TO READERS. We would be glad to have suggestions from readers as to the extension or modification of this list.

Formulas for Silicate or Soda Paint

A few formulas for ordinary silicate of soda paint, taken from The Painters' Magazine, follow as a guide, but need not be strictly adhered to as to nature of the base pigments, while this must be done in the coloring matter and the vehicle:

For White Paint.—50 lb. dry white lead, 10 lb. American zinc, 40 lb. barytes, 100 lb. whiting, 50 lb. clear water. Pulp into a paste and reduce with 50 lb. silicate of soda of 45 deg. Beaume.

For Blue Paint.—100 lb. ordinary lime-proof ultramarine, 60 lb. China clay, 100 lb. barytes, 90 lb. clear water. Pulp this and reduce with 75 lb. silicate of soda, this requiring more water.

For Buff Colored Paint.—100 lb. barytes, 60 lb. dry white lead, 80 lb. China clay, 40 lb. French yellow ochre, 5 lb. Venetian red, 50 lb. clear water, 20 lb. silicate of soda. Pulp this and reduce with 50 lb. silicate of soda, and if too pasty to work add equal parts by weight of water and silicate of soda.

For Green Paint.—75 lb. French yellow ochre, 40 lb. lime-proof ultramarine blue, 100 lb. barytes, 53 lb. China clay, 50 lb. clear water. Pulp and reduce with 50 lb. of silicate of soda. If too stout add silicate of soda and water in equal portions by weight.

For Black Paint.—40 lb. mineral black of fine grade, 30 lb. vine or vegetable black, 50 lb. whiting, 100 lb. barytes, 90 lb. clear water. Pulp and reduce with 75 lb. silicate of soda.

For Red Paint.—100 lb. medium shade of Venetian red, 50 lb. whiting, 100 lb. barytes, 90 lb. clear water. Pulp and reduce with 90 lb. silicate of soda.

In applying silicate of soda paints to wood, the surface must not be extra smooth and the paint must be well stirred during application, otherwise the paint is liable to creep under the brush. The brushes must not contain oil, but if used previously in oil the paint should be washed out with soap and water, and good fiber brushes are best for use in this paint, as it would be wasteful to use expensive hair bristle brushes. One coat will hardly suffice to cover your woodenware and produce the desired finish, as the first coat is bound to dry out flat.



Remembered

Teacher—"Do you know, Tommy, when shingles first came into use?"

Tommy—"I think when I was between five and six years old, ma'am."—New York Evening Post.

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High Prices**



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Will Save
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Carpenters--Contractors--Builders

Write us to-day on your business letter paper and get our free catalogue and special terms to the building trade. We specialize in Roofing, Wall Board, Sash and Doors, Paint, Builders' Hardware, Carpenters' and Mechanics' Tools. Write now for special prices.

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If you cannot call, write for full information

**BRITISH COLUMBIA HAS A WOOD
FOR EVERY USE**

Price List of Building Materials—Continued.

Price at Toronto—Continued

United inches	Glass	Star	D.D.
Up 25 (per 100-ft. box)		\$7.80	11.90
26-34		8.15	12.85
35-40		8.50	13.60
41-50		11.75	15.50
51-60		12.25	15.85
61-70		13.10	16.80
71-80		14.75	18.35
81-84			22.75
85-90			24.35
91-94			25.00
95-100			29.00
101-105			32.00
106-110			37.00

Less 30 p.c. F.O.B., Toronto.
Less 25 and 5 p.c., Montreal.

Wired glass 16c per sq. ft. less
10 p.c.

Brick, Tile, Terra Cotta, Sewer Pipe

No. 1 dry pressed red bricks	\$14.00 to 18.00 pr M
No. 1 dry pressed buff bricks	14.50 to 18.00
Red stock bricks	10.00 to 12.50
Sand lime bricks	8.50
Grey stock bricks	10.50 to 12.50
Sewer bricks	8.75 to 9.50
Wire cut brick for foundation work	8.00 to 9.00
Porous terra cotta bricks	12.00 to 15.00
No. 1 enamelled bricks, all colors, from	80.00 to 150.00
Fire brick	26.00 to 30.00
Rough texture brick	15.00 to 17.00
Sewer pipe, 4 inch	10c. foot
Sewer pipe, 6 inch	16c. foot
Verandah post caps, 16 in.	1.45 each
Verandah post caps, 20 in.	1.75 "
Chimney caps, 1 flue in 1 piece	2.00 "
Chimney caps, 2 flues in 2 pieces	3.50 "
Chimney caps, 3 flues in 3 pieces	5.00 "

Cement, Plaster, Stone, Etc.

Cement (bags extra)	\$1.85 bbl. (1.55 in car lots)
Sand, for cement or brick work	1.20 a yard
Lime	.38 cwt.
Hydrated lime (Canadian)	10.60 ton
Hydrated lime (American)	15.00 "
Mortar color	black, 6 1/2; red. 2
Plaster of paris	\$2.50
Crushed stone, 2 in.	1.20
Crushed stone, 1 in.	1.25
Crushed stone, 3/4 in.	1.25
Hardwall plaster	9.60 neat 4.00 to 5.00 sanded
Gravel	1.50
Hair (plaster)	.07 lb.

PRICE AT WINNIPEG

Hemlock Lumber

2 x 4 in. to 2 x 12 in., 8 to 14 ft.	\$29.00
2 x 4 in. to 2 x 12 in., 16 ft.	29.00
2 x 4 in. to 2 x 12 in., 18 ft.	29.00

Shingles, Lath, Roofing, Etc.

XXX B. C. cedar shingles	\$4.00 & 3.50 per M
No. 1 pine lath	5.75 per M
Metal lath	.16 to .20
Roofing felt (2-ply)	2.50 per roll

Hardware

Nails, wire, common	\$4.00 per keg
Nails, cut, common	4.00
Sash weights, cast iron	2.75 cwt.
Tarred felt paper	1.00 per roll
Building paper	.75
Insulating paper	1.25

Price at Winnipeg—Continued

United inches	Glass	Single	Double
Up 25		\$6.00	8.00
26-40		6.50	9.00
41-50		7.00	10.25
51-60		7.50	11.00
61-70		8.00	11.75
71-80		8.50	12.75
81-85			15.75
86-90			16.75
91-95			17.75
96-100			21.00
101-105			23.50
106-110			27.00

Brick, Tile, Terra Cotta, Sewer Pipe

No. 1 dry pressed red bricks	\$25.00 to 50.00
No. 1 dry pressed buff bricks	30.00 to 40.00
Red stock bricks	25.00
Sand lime brick	12.00
Porous terra cotta bricks	18.00 per M
No. 1 enamelled bricks, all colors, from	100.00
Fire brick	52.50
Oriental brick	35.00
Sewer pipe, 4-inch	.11 per ft.
Sewer pipe, 6-inch	.18 1/2 per ft.

Cement, Plaster, Stone, Etc.

Cement (bags extra)	\$2.60 per bbl.
Sand, for cement or brick work	1.85 a yard
Lime	.34 per bu.
Hydrated lime	12.00 per ton
Mortar color	.05 per lb.
Plaster of paris	.75 per bag
Crushed stone, 2 in.	2.65 per yard
Crushed stone, 1 in.	2.90
Crushed stone, 3/4 in.	2.90
Hardwall plaster	13.00 per ton
Gravel	1.85 per yard
Hair (plaster)	1.25 per bale

PRICE AT VANCOUVER

Shingles, Lath, Roofing, Etc.

XXX B. C. cedar shingles	\$2.20 & 2.10 per M
No. 1 pine lath	2.25 per M

Hardware

Nails, wire, common	\$3.25 per keg
Nails, cut, common	4.25
Tarred felt paper	.90 per roll
Building paper	.70

Brick, Tile, Terra Cotta, Sewer Pipe

No. 1 dry pressed red bricks	\$42.00 per M
No. 1 dry pressed buff bricks	42.00
Red stock bricks	13.00
Fire brick	45.00
Sewer pipe, 4 inch	.25 per ft.

Cement, Plaster, Stone, Etc.

Cement (bags extra)	\$3.00 per bbl.
Lime	1.35 per bbl.
Hydrated lime	4.25 per bbl.
Plaster of paris	4.50 per bbl.
Hardwall plaster	14.50 per ton
Hair (plaster)	14.50 per ton

NOTE TO READERS. We would be glad to have suggestions from readers as to the extension or modification of this list.

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*Everything in Lumber
Timbers, Sash, Doors, Columns, Etc.*

Head Office: 65 Yonge St., TORONTO

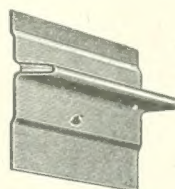
W. Walker & Son

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To Carpenters and Builders this weather-strip constitutes a necessary part of the equipment in the building of factories, offices and residential property. It is wind and dust proof, and reduces fuel bills. Windows work easier with than without it. It does away with storm sash, and lasts a lifetime. Write for illustrated pamphlet or further information to

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Professional Directory

Architects, Engineers, Patent Attorneys, Etc.

Patent Attorneys

will find that they can get a good deal of business from readers of this paper by persistent advertising.

Patent Your Inventions

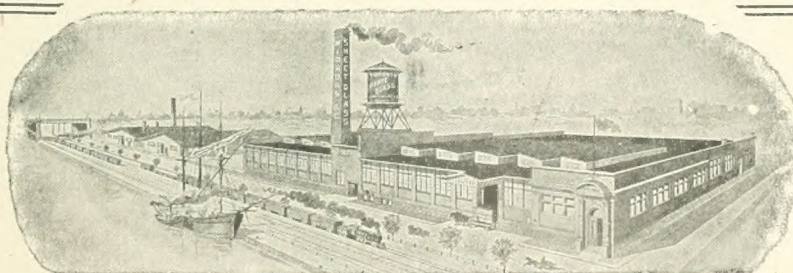
Perhaps some simple device you thought of for your own use may be valuable. Write for free book of complete information.

Stanley Lightfoot Registered Patent Solicitor & Attorney
208 Lumsden Bld., (Yonge & Adel. Sts.) Toronto

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THE
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Plate, Window, Figured, Stained, Wired, Bent, Mirror
and Ornamental Glass

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TORONTO

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B.B.L. High Grade Planing Mill Products, Boxes & Box Shooks



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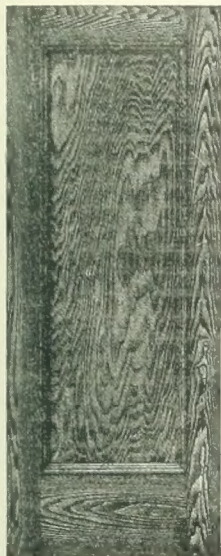
BENSON & BRAY, Limited, Midland, Ont.

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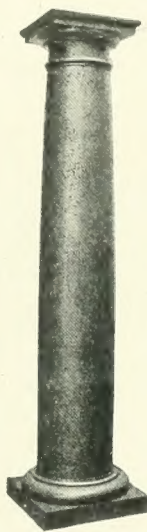
VENEERED & PINE DOORS



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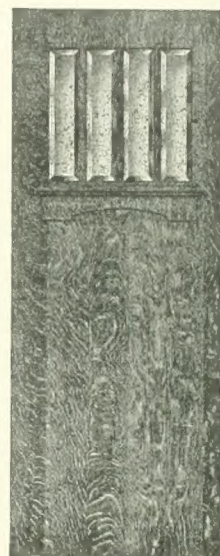
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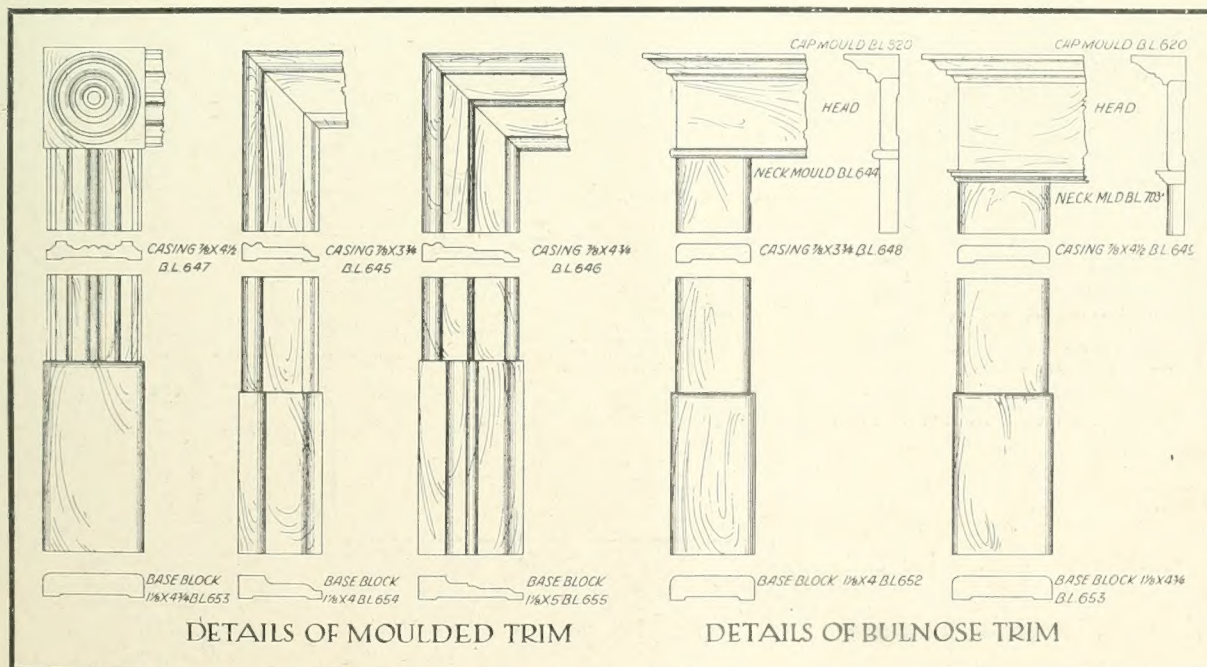


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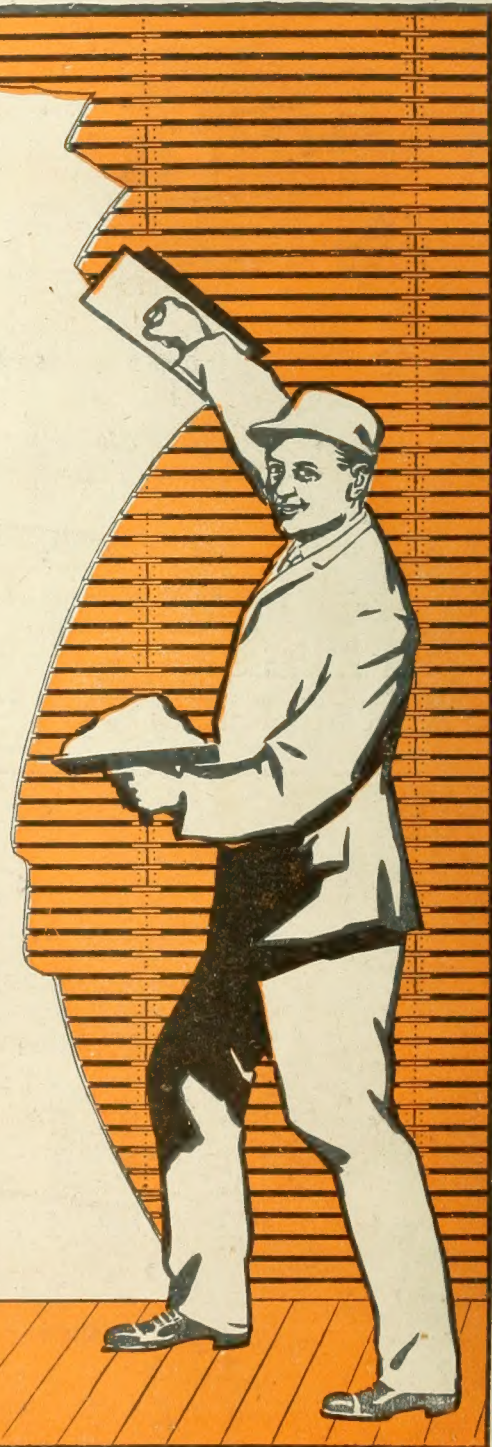
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For plastering directly on Concrete Ceilings,
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